The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXLV No. 6272 — LONDON, NOVEMBER 4, 1955 — PRICE 8d.

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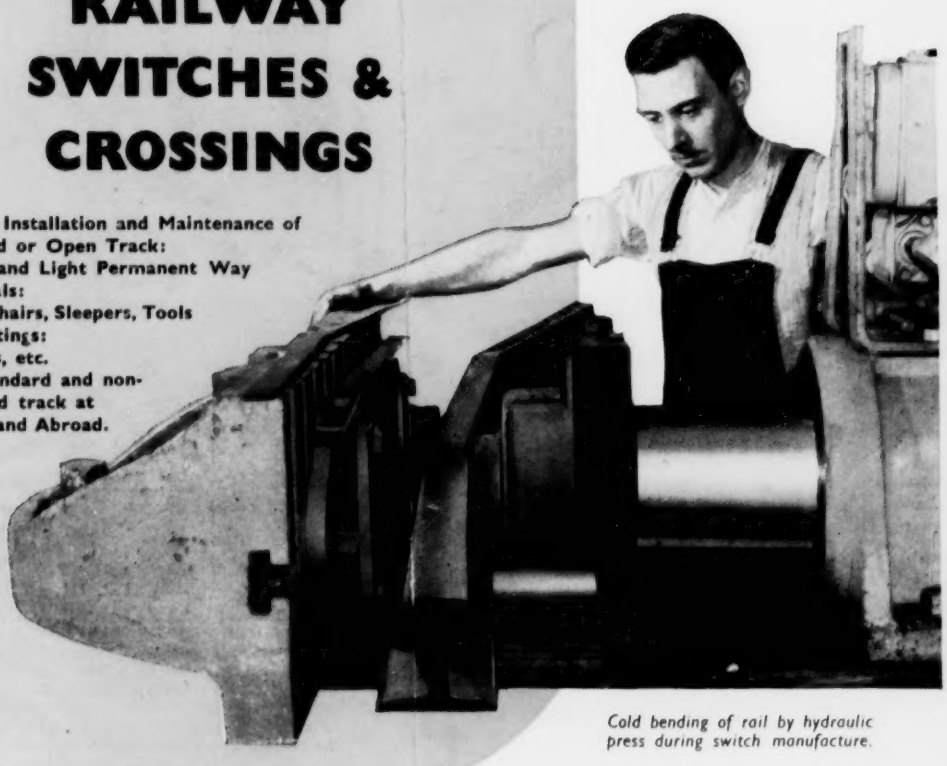

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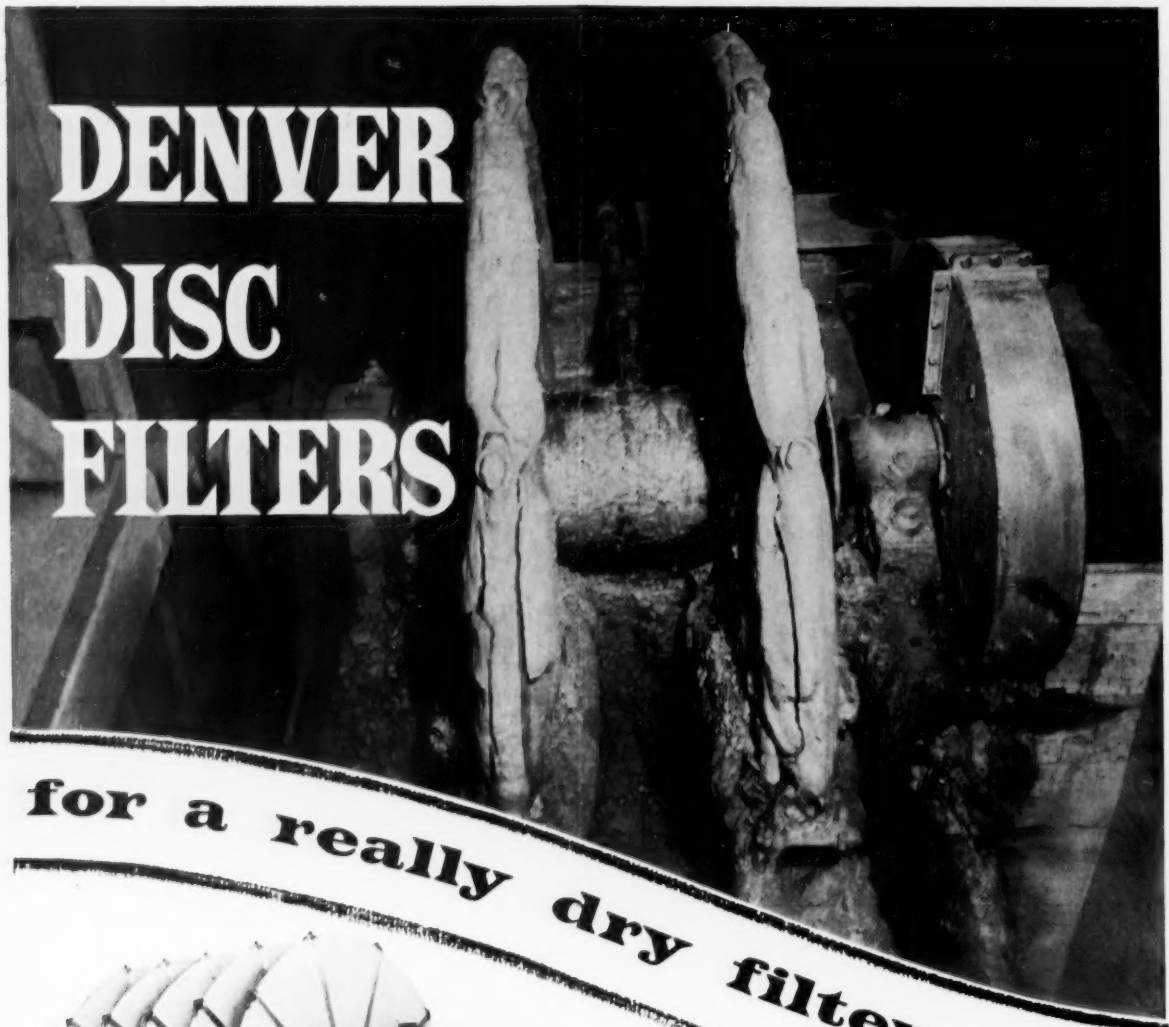

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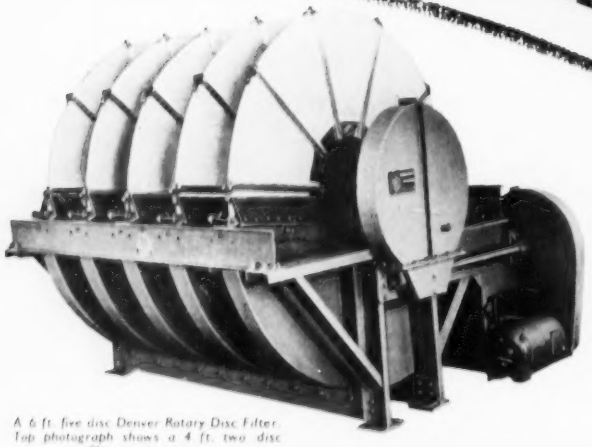

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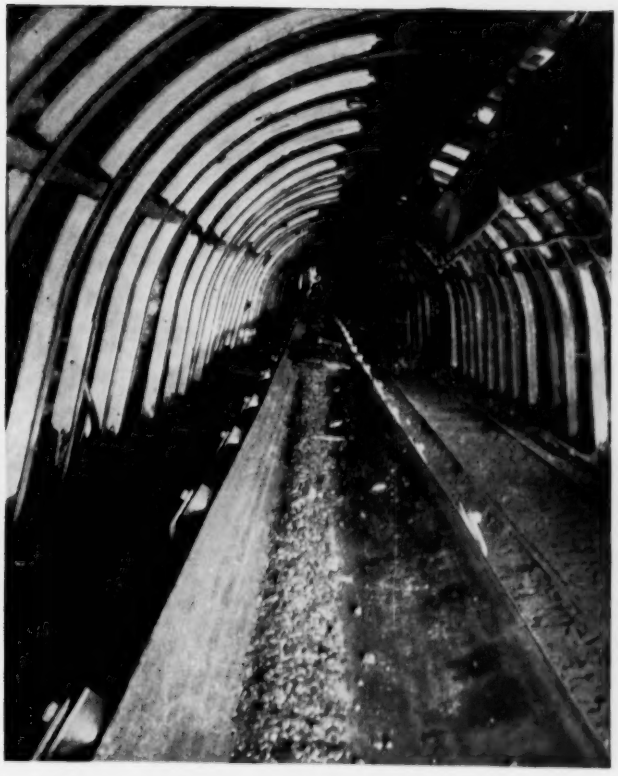

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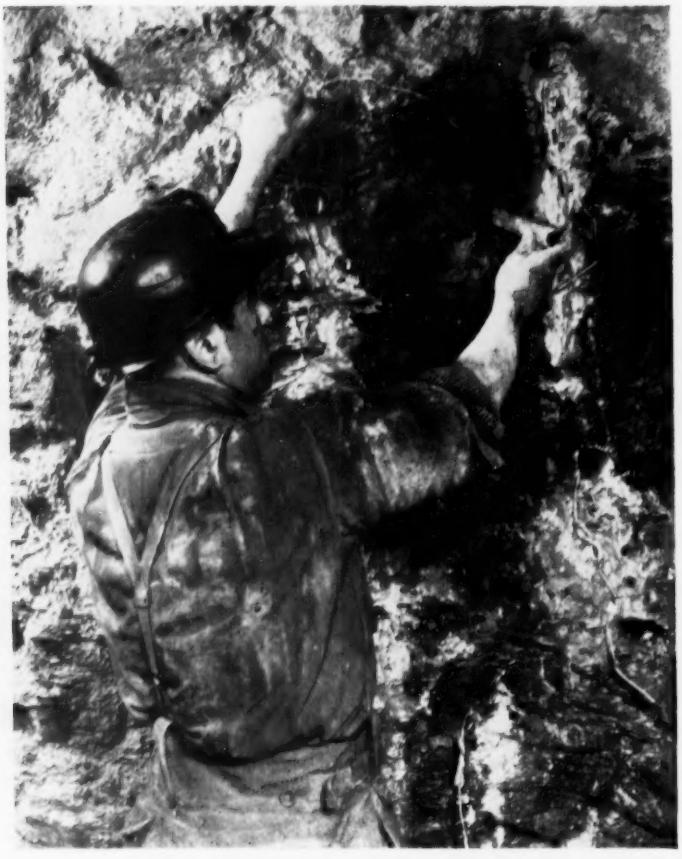

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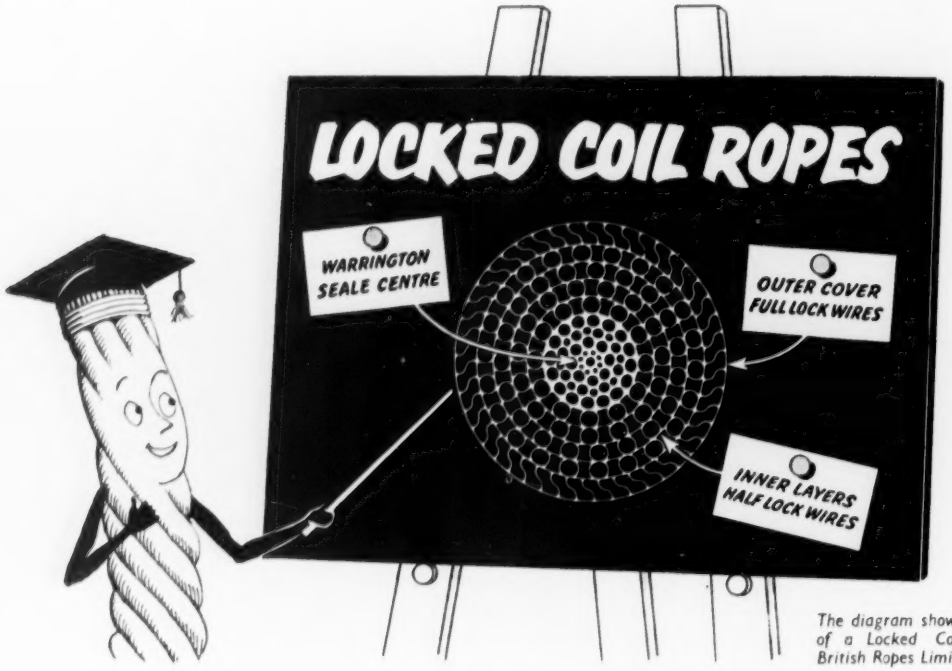

The diagram shows the end section of a Locked Coil rope made by British Ropes Limited.

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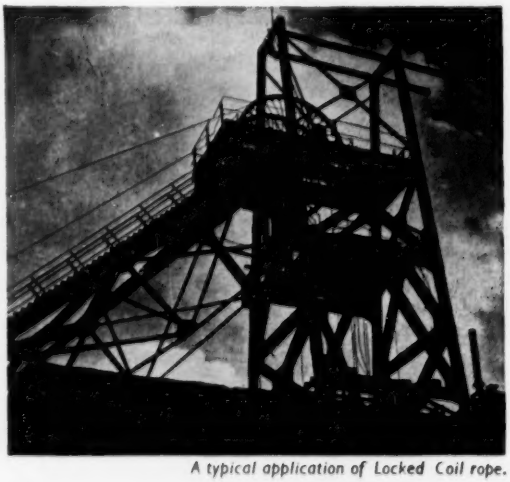

A typical application of Locked Coil rope.

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The Mining Journal

Established 1835

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NOTES AND COMMENTS

British Mining Machinery Exports

The three-man team—Mr. M. Boyer, Deputy-Minister of the Canadian Mines Department, Mr. T. Little, general manager of Waite Amulet Mines, and Mr. V. C. Wansbrough, vice-president and managing director of the Canadian Metal Mining Association—representing the metal mining industry of Canada, which arrived in this country on September 26 last at the invitation of the Dollar Exports Council and under the auspices of the Canadian Metal Mining Association, returned to Canada on October 28. Because the belief is firmly held that sales of U.K. mining machinery to Canada could be expanded substantially, the purpose of the three-man mission was primarily to obtain a clear idea as to the range of mining machinery produced in this country suitable for consumption by the Canadian mining industry and to encourage U.K. manufacturers to enter the Canadian mining market.

The purpose of the Mission was sound in more ways than one. For some years past the U.K.'s trade balance with Canada has been in deficit—an unfavourable economic fact which has not been made any the more palatable by the U.K. mining industry's contribution towards closing this important dollar gap. This is only too obvious from the latest figures released by the Canadian Metal Mining Association indicating that Canadian imports of mining equipment from the United Kingdom account for about 6 per cent of all mining equipment Canada purchases abroad. At present, the U.K. is supplying equipment valued at £333,000 annually which contrasts sharply with imports from United States worth £6,956,000 a year and with mining equipment absorbed from other countries worth £683,000 per annum. These statistics not only provide the *reason d'etre* for the Mission's visit to these shores, but also reveals the size and worth of the actual market available in Canada.

Going beyond the very good common-sense explanation that to expand U.K. trade with Canada means more scope for the expansion of overall Anglo-Canadian trade, there are reasons more compelling—for the Canadian mining industry at any rate—to encourage a more active participation of U.K. mining machinery manufacturers in the Canadian market. Qualitatively, mining equipment produced in the U.K. is as good as, or better than, similar products Canada can obtain elsewhere. But, and this is important, U.K. costs per unit delivered are about 10 to 20 per cent cheaper. Further, delivery dates U.K. manufacturers can now quote in general are comparable to those effective in the United States and, thus, there does not seem to be any *prima facie* reason why U.K. manufacturers cannot capture a fair share of the Canadian mining market.

Yet, this information can hardly have come as a surprise to manufacturers here, who have long been interested in Canada as a market outlet for their products. Even so, it would appear that there are very few U.K. companies possessing a clear idea of the special requirements of the Canadian mining market. In fact, beyond personal visits at Board level, very little has been done to try and assess the needs of particular mines, much less evaluate the potential worth of the market as a whole. A further disincentive to come to grips with the problem lies in the knowledge that United States manufacturers have been in the Canadian market for many years, have overcome initial teething troubles, and are organized to provide the all-essential after sales service. Moreover, competition in Canada can only be described as fierce, a situation which does not arise in such an acute form in most of the other and more traditional mining machinery market outlets which Britain has been serving in the post-war period.

Indeed, it is when the world market for U.K. mining equipment is taken into consideration that, to keep a sense of proportion, Canada must be viewed as only one aspect of a very much larger problem. However, the difficulties associated with breaking into the Canadian mining machinery market present themselves in a more or less intense form in other markets, so that the vital question requiring an answer is how far and to what extent can and should U.K. manufacturers of mining machinery and equipment expand exports. On the face of it, to pose such a question in a country which must export or bust, may seem inane. But the mining industry is in a rather unique position compared with industries in other sectors of this country's economy. So much of its productive time and output is, in effect, governed by demand schedules drawn up in Hobart House which leads to a conflict of interests. On the other hand, the availability of mining machinery determines to a large extent the production of coal without which the whole country suffers as recent events have

shown; while on the other, for many companies, to expand exports is only possible by quoting longer delivery dates to the National Coal Board.

There would appear to be a strong case for expanding the U.K. mining machinery industry. But, before this can be undertaken, it is essential that the industry, jointly with the N.C.B., work out an agreed long-term allocation of productive capacity for the U.K. coal mining industry. Unless and until this basic requirement has been thoroughly examined any forward planning to achieve an expansion of exports is impossible. It may well be found on investigation that it is lack of forward thinking on the part of a few U.K. manufacturers rather than of planning data that prevents an expansion of their exports being accomplished with their present capacity if such was utilized in a more efficient manner. In any event, once a company's production and administrative control has been arranged to effectively deal with exports, justification for an expansion of productive capacity on a permanent basis could be assessed on a comparatively simple basis.

However, this may be to state the case too simply as what the industry requires is a major marketing survey designed to analyse not only the volume and diversity of potential overseas markets but also to establish a co-ordinating mechanism through which the industry could operate to keep in touch with the special needs of overseas mining industries. Certainly the problem is a real one and since it is hardly feasible for the government to discuss these questions with the industry as a whole, unless it has in being an active and authoritative trade association, the first important step towards broadening exports of the U.K. mining machinery manufacturing industry may well be to put some teeth into the Underground Mining Machinery Manufacturers Association or to link this association to some wider organization.

The foregoing is, of course, little more than an outline of but a few of the problems and difficulties standing in the way of this country expanding its sales of mining machinery abroad, and we hope to revert to this important subject in these columns in a later issue.

Oil Industry Causing Tight Platinum Position

Despite the steady increase in the New York platinum price (which has risen in the past fortnight from a $91/$94 basis up to $97/$105), the leading U.K. suppliers are not thought to be contemplating any immediate change in their quotations for U.K. refined metal. Considering that they could to-day be getting another £7 or £8 an oz. in the open market, U.K. producers are, to say the least, taking a long view of their sales problem and nursing customer goodwill, which may well stand them in good stead when the present, and probably temporary, shortage is over and the increasing Canadian and South African output will still have to be marketed.

The immediate shortage is directly attributable to the stupendous demand for platinum in the latest petroleum refining processes, which employ special platinum gauzes. Not only is new refinery capacity demanding these gauzes, but much of the existing catalytic plant is being modified to bring it into line with present practice. The effect of this is that Canadian and South African platinum production is heavily committed for another year or more ahead in meeting this new demand. Once, however, it has been satisfied, consumption in this field is expected to die away to a replacement requirement of about 5 per cent per annum—aside from any further new refinery construction there may be. This replacement requirement can, of course, be easily taken care of, and it would therefore seem that by the end of next year the chemical and electrical industries may expect relief from their present difficulties. With dealers' stocks extremely low, the extent of these difficulties currently depends not a little on the amount of platinum coming from Russia. Of late, the Russians have been selling substantially for sterling in Europe and no doubt much of this metal has subsequently found its way to New York. However, in the last few days Russian sales have ceased, at any rate for the moment, and the consequently tighter position is reflected in the rising New York price.

More Uranium Secrets Revealed

The United States Atomic Energy Commission, in accordance with its access permit programme, recently declassified all technical information on currently used extraction processes for recovering uranium as unrefined uranium concentrates. At the time this declassification action did not, however, relate to the refinement of uranium concentrates into highly purified forms, nor did it include technical information concerning any new and important extraction processes.

Last week, however, the A.E.C. went a step further when it annouced that it was inviting private companies to submit proposals for the production of refined uranium salts in accordance with its policy of expanding private participation in the U.S. uranium industries. Until now the A.E.C. had been purchasing uranium ore extracted by private mining companies and refining it through their own government sponsored establishments. To achieve a wider participation by private industry, the A.E.C. will now make available the necessary technical information relating to the processes.

Thus gradually the secrecy surrounding the processing and production of uranium is being lifted. There is no doubt that the surprising amount of hitherto secret information exchanged at the recent Geneva Conference went a long way towards putting uranium on a more open basis, yet the real reason behind the U.S. Government's decision to reveal so much hitherto secret information may conceivably be that the future of the atomic age can now be seen to depend ultimately upon the development of hydrogen as an atomic fuel.

France Seeks Foreign Investment Funds to Stimulate Mining Industries

To stimulate the development of its natural resources in the French Union—more particularly in Metropolitan France—the French Government has proposed to the Assembly recommendations which, if enacted, should attract a flow of foreign investment funds.

For this purpose, it is reported that the French Government is now prepared to grant all guarantees in the field of tax regulations, exchange rates, and possibilities of repatriation to foreign investors in the French Union. More than that, the French Minister of Overseas Territories has specified that guarantees would be given to protect foreign investments against any nationalization of such industry.

The explanation behind these decisions is that the available funds of French investors are not believed to be sufficient to finance the completion of certain huge projects in Mauretania, French Guinea, and Togoland over the next five years. This refers particularly to plans to develop the copper deposits at Akjoujt, the iron deposit at Fort Gouraud in Mauretania and an aluminium industry in Guinea where Italian, German and U.S. funds are believed to be available to co-operate with French investments. Other important projects calling for substantial funds in French Overseas Territories are the manganese deposits at Franceville, the phosphate deposit in Taiba, French West Africa, and the rich potash deposit in Gabon.

Brazil

(From Our Own Correspondent)

Teresopolis, October 11.

British exporters will welcome the news to the effect that Brazilian importers are now able to place their orders in the U.K. for the first time since sterling exchange auctions were suspended in November, 1954. Certificates for 550,000 "Limited Convertible Area Dollars" (ACL$) have been sold weekly at all Brazil's Stock Exchanges since August 20, and may be used indiscriminately for imports payable in sterling, German marks or Dutch florins. Thirty per cent of the total is reserved for Rio and 30 per cent for Sao Paulo, the remainder being distributed among the smaller exchanges.

The rush to import made the cost of ACL dollars almost prohibitive at the first auction. Premiums at Rio for categories 1, 2 and 3 imports, which include the bulk of mineral raw materials and manufactures (see *The Mining Journal*, December 4, 1953, and May 14, 1954) averaged 148.89 cruzeiros, and boosted the cost of the £ to 474.85 cruzeiros, as compared with 190.06 at the November sterling auctions. Premiums dropped progressively at subsequent sales to 101 cruzeiros on October 6, reducing the cost of the £ to 340.76.

The cost of the £ is found by adding the premium paid for certificates to the official rate of 18.82 cruzeiros per U.S.$, plus the 10 per cent import tax, and multiplying the result by the U.S.$/£ cross rate of 2.80.

All foreign currencies are now in short supply, particularly the U.S.$, and auction values are rising. No spot American dollars have been auctioned this year and the average price paid at Rio for dollars at 120 days, for categories 1 to 3 imports, increased from 87.27 cruzeiros at February sales to 115.64 in September. During the same period the auction value of French francs, Swedish kronen and Belgian francs increased 41, 73 and 29 per cent respectively. The average premiums paid for Japanese and Italian "convention dollars" increased this year by 51 and 117 per cent.

Owing to the difficulty in obtaining copper, imports into Brazil may be paid for in currencies other than that of the country of origin.

MINERAL DEPOSITS

New occurrences of copper and nickel ores have been discovered at Patos de Minas, Minas Geraes, and Jacupiranga, in the Iguape Valley, Sao Paulo, respectively. The Iguape region, in which deposits of lead, zinc, tin, nickel and silver are already being exploited, is to be exhaustively examined by the DNPM.

Deposits of mica have been discovered in Goias, of rock crystals in Piaui, copper ore at Bage, Rio Grande do Sul, and manganese of 67 per cent Mn content at Obidos, Para. On the River Paracatu, in northwest Mineas Geraes, two newly-discovered deposits of zinc, associated with lead and copper, are being prospected by Companhia Tocantins de Niquel. The deposits lie south of the town of Paraguacu, near the Goias border, and are believed to be important.

A valuable occurrence of columbium, or niobium, is reported from Araxa, Minas Geraes, with reserves of 3,000,000 tons, corresponding to between 1,500,000 and 2,000,000 tons of NbO. Dr. Othon Leonardos believes that the deposits will prove to be the most important so far known to exist in any country. Drillings to date reveal the ore to depths of 111 m. The relation Nb/Th is practically constant at around 40. Representative specimens taken at a depth of 3 m. show between 3 and 4 per cent Nb_2O_5.

Canada

(From Our Own Correspondent)

Blind River, October 24.

While the mining industry in general is enjoying widespread growth and prosperity throughout Canada, special stress is being placed these days on the development of new and large sources of iron, uranium, petroleum, and natural gas.

Iron ore development and production is forging ahead with outstanding strides in three areas, Labrador-Quebec, Michipecoten in the Sault Ste. Marie area of Northern Ontario, and in the Steep Rock field of North-Western Ontario. Added to this is the vast low grade iron range of Ungava Bay. Students of iron mining foresee likelihood of Canada's iron ore production rising to 30,000,000 to 40,000,000 tons annually within the next ten to fifteen years —a gross value of upwards of $300,000,000 a year.

Uranium mining is gaining in prominence throughout Canada, and production has been established from three widely separated areas, namely Great Bear Lake, the Beaverlodge area of Saskatchewan, and Blind River in Northern Ontario.

[*These areas have been discussed this year in our issues of January 21, February 11, March 11 and 18, April 8, and May 13 and 27.—Ed., M.J.*]

Meanwhile, with three widely separated uranium fields having already come into production, still another field, known as the Bancroft area in Eastern Ontario, has reached a stage where production is assured, although on a somewhat smaller scale than Blind River or Beaverlodge.

CONFIDENCE IN URANIUM

Leaders in the uranium mining industry of Canada are approaching their task with an attitude of supreme confidence, and are outspoken in expressions of their belief that there will be no lessening of the demand for uranium in the foreseeable future—say the next 20 to 25 years. Added to this fact is that financing of the chief enterprises is being accomplished readily through the more conservative bond houses and banking institutions.

Mr. F. B. Odlum, president of Atlas Corporation, has been quoted as expressing the opinion that the domestic requirements of fissionable materials in the United States for development for industrial, agricultural and medical purposes may soon begin to exceed the sources of supply of the mineable deposits so far revealed in the United States.

Mr. J. C. Johnson, an outstanding authority, is quoted to be of the opinion that uranium concentrate at $12 lb. will be considered to be of moderate price.

The Hon. P. T. Kelly, Minister of Mines in Ontario, during a recent visit to the mining fields, has expressed the view that the Blind River uranium field will become the second largest mining area in Canada—exceeded only by the copper-nickel mining field of Sudbury. He referred to the Blind River field as perhaps the world's greatest single potential source of radioactive minerals. Mr. Kelly declared: "The most reliable estimates available at this date show that the one billion dollars worth of uranium ore has already been outlined in the rocks of the area, and another two billions are indicated. What this entirely new source of wealth is likely to mean eventually to the nation's economy is rather staggering. Already the Canadian Government, through the Eldorado Mining and Refining Ltd., has signed firm contracts for the purchase of nearly half a billion dollars worth of ore from the Pronto, Algom, and Consolidated Denison Mines."

DIAMONDS—II

World Diamond Production in 1954

The following article is the last of two instalments dealing with the diamond industry throughout the world in 1954, and deals with those producing countries other than the Union of South Africa, which was discussed last week. The article is an abridgement of the 30th Annual Report of the diamond industry in 1954, published by the publishers of *The Jewelers' Circular Keystone*, and prepared by G. Switzer, associate curator in the Division of Mineralogy and Petrology of the Smithsonian Institution, United States.

A cursory examination of the map published previously as part of the first portion of this article will reveal that the African continent produced no less than 97.4 per cent of world diamond production during 1954. Some 61 per cent of the output was won in the Belgian Congo.

AFRICAN TERRITORIES

Belgian Congo. The diamondiferous area of the Belgian Congo occupies a wide area covering tributaries of the Kasai-Sankuru River system. The two principal deposits are the Kasai field, an extension of the Angloa deposits, and the Bakwanga deposits, located between the Kanshi and Bushimaie Rivers. About 95 per cent of the Belgian Congo production comes from the Bakwanga deposits. The desposits are all alluvial. Pipes of low diamond content are known in the Katanga District. Congo production averages better than 95 per cent industrial quality.

The mine at Bakwanga is operated by the Société International Forestiére et Miniére du Congo on behalf of the Compagnie Chemin de Fer du Bas-Congo au Katanga (Forminiére and Bécéka), and production for 1954 was 12,619,378 ct.

Sierra Leone. Diamondiferous gravels lie within the Bafi-Sewa River drainage system, and the majority of production is from the Kono district. The diamond-bearing gravels are 2-5 ft. thick, overlain by 2-20 ft. of overburden. The diamonds are generally small, averaging 2-5 per ct., although some very large stones have been found. About 66 per cent of the total production is industrial quality. Total production for 1954 was 398,608 ct.

The diamond mining in Sierra Leone is carried on by Sierra Leone Selection Trust Ltd., a subsidiary of Consolidated African Selection Trust Ltd. During the year the Sierra Leone Legislative Council passed a bill confirming the agreement between the Government and Sierra Leone Selection Trust.

French Equatorial Africa. Diamond deposits are alluvial in nature, and are located principally in three territories, Moyen Congo, Gabon, and Oubangiu Chari. The principal mining companies are Compagnie Minière de l'Oubanghi Oriental (CMOO), Société de Recherches et d'Exploitation Diamantiferes (SOREDIA), Société Minière Intercoloniale (SMI), Compagnie Minière de Carnot, and Société Minière de l'Est-Oubanghi. Of these, CMOO is the principal producer, followed by SMI. Production for 1954 was 152,529 ct.

French West Africa. The principal diamond deposits are in Haute-Guinée, between Beyda and Kisidougou. Total production in 1954 was approximately 216,000 ct., an increase of about 36,000 ct. over the previous year.

The principal companies operating in French West Africa are Société Guinéenone de Recherches et d'Exploitations Minières (SOGUINEX), Société de Recherches et d'Exploitations Minières en Côte d'Ivoire (SAREMCI), and Société Minière de Beyla. French West African production averages about 66 per cent industrial quality.

Gold Coast. Diamond deposits are in the Birim River district, about 65 miles northwest of Accra. The diamonds occur in beds of gravel two to five feet thick lying in or near present-day stream beds. The diamonds are generally small, averaging 20-22 stones per carat.

Production by Consolidated African Selection Trust Ltd. in 1954 consisted of about 17 per cent gem grade and 83 per cent industrials. Overall production (company plus African diggers) averages about 78 per cent industrial quality.

Diamond mining in the Gold Coast is carried out by European companies and licensed African diggers, working singly or in small groups. There were four companies working in 1954, of which the largest is Consolidated African Selection Trust Ltd. (CAST). Other companies are : Cayco (London) Ltd., Holland Syndicate, and West African Diamond Syndicate. Production in 1954 was 2,135,141 ct.

Angola. The diamondiferous area of Angola is a continuation of the diamond bearing region of Kasai, Belgian Congo. The deposits lie within the basins of the Tschikapa, Luachimo, Chuimbo, and Luembe Rivers, tributaries of the Kasai. Diamond mining in the territory is performed under an exclusive concession held by the Companhia de Diamantes de Angola. Angola diamond production in 1954 at 721,607 ct. showed a decline of about one per cent over the previous year.

Tanganyika. Diamond production in 1954 was nearly double that in 1953, due to greatly increased facilities at the Mwadui mine of Williamson Diamonds Ltd. The largest diamond yet found in Tanganyika was recovered at the Mwadui mine during the year. The stone weighed 181 ct. Details regarding its quality and value have not been released. A total of 326,009 ct. was produced last year.

OTHER COUNTRIES

British Guiana. Diamond production is declining. The 1954 production of 30,073 ct. is considerably less than the 35,306 ct. of the previous year, and much below the 1951 figure of 43,260.

Venezuela. The diamondiferous area is situated in the State of Bolivar, particularly in the area known as the Gran Sabana. The average grade of the diamondiferous gravel is 0.50 ct. per cu. m. The stones are generally small, averaging 8 to 10 per carat. Production in 1954 (96,983 ct.), consisted of about 30 per cent gem quality, 70 per cent industrials.

Other countries where diamonds are found in small quantities include Indonesia, Surinam, Southern Rhodesia, Liberia, Australia and the United States. Total production from these probably does not exceed 2,000 ct. a year. Production from these countries plus India is estimated to be 5,000 ct.

Synthetic diamonds were made in 1954 by the General Electric Company, Schenectady, New York, although the accomplishment was not announced until February 15, 1955. General Electric's first diamond was made by subjecting a " carbonaceous compound " to a pressure of about 800,000 lb. p.s.i., and a high temperature (presumably near 5,000 deg. F.) for 16 hours. The resulting diamond was a single crystal of near-gem quality about $\frac{1}{16}$ in. long. At still higher temperatures and pressures diamonds were made in a matter of minutes.

DUCTING—I

Flexible Ducting for Mine Ventilation

Large quantities of ventilating air, approaching 1,000,000 cu. ft. per min., will need to be circulated through the workings of the many new collieries being constructed or planned by the National Coal Board to work deep, gassy coal deposits. In this connection, Regulation 14 (1) (c) of the Coal Mines (Ventilation) General Regulations, 1947, provides that every auxiliary fan shall have an air duct for conducting the air to ultimate destination and that the air duct be maintained in such condition as will minimize leakage of air and ensure delivery to within 15 ft. of the face. The following article, the first of two instalments, presents initially the conclusions resulting from the research on ducting undertaking by the N.C.B. The concluding instalment will describe the various products in this field currently being made available by manufacturers in the United Kingdom.

The efficiency of all mine ventilation systems depends ultimately on the performance of the ducting. Furthermore, the capital cost of the ducting is by far the greater part of the total capital and running cost of an auxiliary ventilation system. Much research on ducting has therefore been undertaken by the National Coal Board and some interesting conclusions have emerged.

Coupling Pluvicor ducting

A leaky duct will normally deliver an adequate amount of ventilating air in a heading provided that it is not more than 200-300 yd. long and that there is no abnormal make of gas in the heading. During recent years, however, the use of delay-action detonators and of electrical machinery has made it necessary to deliver larger quantities of ventilating air at the face of headings and also to drive long drifts which sometimes exceed 3,000 yd. The National Coal Board has found that for applications of this nature the type of ducting commonly used in the past is unsuitable.

N.C.B. TESTS

Tests carried out at the N.C.B. Central Research Establishment have led to the production of graphs from which the capacity of the fan required to deliver any quantity of air through a duct of known leakiness can be determined. These charts show that it is impossible to deliver adequate volumes of air through a leaky duct with one fan of practicable size, unless the duct is short. For example, using an 18 in. dia. duct in good condition with riveted seams in order to deliver 3,000 c.f.m. at the face of a heading 1,000 yd. long, it would be necessary to use a fan having a capacity of about 12,000 c.f.m. at 30 in. W.G., and fitted with a motor of about 100 h.p. If the duct were airtight, a fan with a capacity of only 3,000 c.f.m at 8¼ in. W.G., and fitted with a 7 h.p. motor, would be sufficient. Even for short headings a leaky duct is wasteful of air, and therefore of power, and is inefficient.

It is concluded that for the satsifactory and efficient ventilation of any underground heading, the duct used should be so designed, installed and maintained that its leakage coefficient—i.e., the volume of air leaking through 100 ft. of duct per min. at a uniform pressure of 1.0 in. W.G.—is not more than 10-20 c.f.m. The N.C.B. consider that this standard can be reached without difficulty.

SPECIFIC REQUIREMENTS

There can be few places where more is demanded of an air-duct than when it is installed underground. No ducting at present available is capable of meeting fully all the requirements of mine ventilating engineers, which are :

(a) Ducting should be easily transportable underground and quick and easy to install;
(b) It should possess and maintain a high efficiency, therefore pressure and quantity losses must be kept to a minimum;
(c) It should be non-inflammable and should not support combustion;
(d) It should be rot-proof and unaffected by corrosion;
(e) It should be reasonably robust to prevent it from sustaining damage, but capable of quick and easy repair should damage occur;
(f) Its cost must be low in relation to its life.

Two main types of ducting are used for underground ventilation, namely rigid ducting made from light steel sheet and a flexible type made from rubberized cotton canvas and other materials. Metal ducting is robust, but it is not easily transportable underground and is also subject to deterioration in the form of corrosion and of dents which increase friction losses. A further disadvantage is that the flanges may become strained, thus causing serious

Flexadux plastic ducting type "S"

leakages. Strong flanges are essential, both for protection against damage during transport and also to maintain the circular shape of the duct. Flanges which meet the requirements of the N.C.B. standard specification are stronger than the tubing itself.

The use of fabric ducting allows some of the difficulties associated with the metal type to be overcome. Flexible ducts are very much easier to transport and both quicker and easier to install. Stiffening rings are sometimes employed, the usual practice being to fit them on the outside of the tubing so that the inner surface of the bore can be left smooth.

The National Coal Board makes extensive use of flexible ducting in headings up to about 200 yd. long for temporary ventilation and sometimes in quite long headings. Flexible ducting is also used for the ventilation of headings or roads in which room is unrestricted, or which are not straight. It has proved useful in situations where ducts have frequently to be moved, as in intensive bord and pillar work.

Flexible ducting is traditionally made of cotton or canvas fabric, or of woven jute, all of which are inflammable and liable to become brittle and rot, although they can be afforded protection by proofing with natural or synthetic rubber. Attempts to overcome these limitations have led to some notable developments in the production of fabric ducting, of particular importance being the growing use of polyvinyl chloride (PVC) to impart improved properties to the fabric.

USE OF P.V.C.

For a number of years it has been recognized that a need exists for a fabric which is more effectively gas-tight than traditional cloths, as well as less dangerous in case of fire and more resistant to abrasion. In recent years cloths coated with PVC have been accepted by the N.C.B. as fulfilling requirements.

Brattice cloths used below ground are likely to be subject to tension, wear and flexing, and are exposed to damp and even wet conditions. The influence of these factors varies from site to site, but extensive tests have proved that PVC coated cloths, despite their higher cost, are economical in the long run because of their greater service life. As a dressing material to obtain gas tightness, PVC has given very satisfactory results, overcoming the tendency of some other materials to shed and thus lose their effectiveness. The well-known tendency of rubber to perish under variable conditions is not encountered with PVC.

Unsupported PVC tubing has also been developed for use in mining ventilation underground. This type of ducting demands a specialized welding technique and cannot be made resistant to tearing. There is also a tendency to crack under shock conditions at low temperature. Nevertheless, plastic ducting is being used in very large quantities, notably on the Continent, and its performance is claimed to be very satisfactory, both under test and in actual service underground.

The National Coal Board has developed laboratory tests for the evaluation of flexible ducting and brattice cloth. Formerly there was no satisfactory means of testing the various types of fabrics proposed for ducting; hence purchasing had to be based mainly on price and partly on visual inspection, which could be greatly misleading. Fabrics are now tested at Isleworth for joints, leakages from seams, permeability, tear strength, and other important properties. It is hoped that this work will lead to a further improvement in the standard of flexible ducting. Underground tests are in progress. Alternative materials for rigid ducting are also being investigated by the Board.

Mineral Dressing Text Book

In *An Introduction to Mineral Dressing*, by E. J. Pryor, A.R.S.M., D.I.C., M.I.M.M., the author, who is Reader in Mineral Dressing at the University of London, has produced a book which is very readable and not only deals with the dressing of ores but also covers coal cleaning and a section dealing with cyanidation. The work is published by Mining Publications Ltd. at 70s.

To some readers cyanidation may appear as outside the scope of mineral dressing but this particular branch of hydro-metallurgy usually falls to the lot of the " mill-man " in a gold mine and its inclusion is probably wise.

On the other hand, the segregation of plant solely for coal treatment is less easily justified, as it is impossible to divorce the types of concentrating plant designed essentially for coal cleaning from those more usually employed for dealing with ores. For example, the chapter on " Dense Medium Separation " deals exclusively with the application to ores as well as the general aspect of the process but under " Coal " we find machines, similar in principle, used for coal cleaning. Again the Baum jig is described in the " Coal " chapter, but it is a jig and should be included under this heading as it is not used exclusively for coal and the ordinary plunger jig is sometimes employed for the same purpose. Incidently, some of the modern methods of jigs control have been omitted.

In the introductory remarks the author says that " Mathematics are reduced to a minimum " and points out that " the mathematical study of a subject is incomparably right, but in our present state of knowledge, the available data are both inadequate and unsuitable for scientific purposes ". Whilst this may be true to some extent, it is an oversimplification and it is a pity that the student should be led to believe that a mathematical approach is of no value as he should learn to appreciate the fundamentals (even if they are only part-truth).

COMPREHENSIVE CHAPTERS

The book follows the usual order but a very useful chapter has been inserted in the early part termed " Acceptance into the Mill ", which covers such details as sampling, weighing, washing, etc.

Crushing and grinding are considered in five chapters but again it seems a pity that no mention is made of some very useful mathematical expressions.

Granulators are dealt with somewhat perfunctorily and there is no mention of the parallel pinch type of gyratory.

A chapter on laboratory sizing control contains some valuable information. In addition to the usual space devoted to processes, considerable space is given to " The Physics and Chemistry of Pulps ".

Towards the end of the book, a number of processes are covered under " Unit Processes and Machines ", including both magnetic and electrostatic separation, and it seems a pity that a little more space has not been given to such processes. In fact, magnetic separation could have been given a chapter as in some cases it is a major process. Roasting is covered only as an incidental process in cyanidation but heat treatment should be worthy of a separate place as it can be used for a variety of purposes.

In one or two places the text is not over clear, for example, the author states that " all pumps can lift the feed a short distance but in practice this is not the case ". The reader might feel that this implied a discrepancy between theory and practice whilst in point of fact the Wilfley pump (which is the pump under discussion) is designed to be gravity fed owing to the sealing arrangements. F.B.M.

Research on Ore Wagons

The iron and steel industry of the United Kingdom is heavily dependent on rail transport. The blast furnaces consume over 500,000 tons of ore and 250,000 tons of coke a week, besides other materials. The steelworks, in turn, absorb some 300,000 tons of pig iron and bought scrap weekly, as well as large tonnages of coal and oil. Almost all this material, together with about three-quarters of the weekly output of 280,000 tons of finished steel, is normally delivered by rail. It is therefore evident that the speed and efficiency with which materials can be moved by rail, especially in the initial process of ore carrying, have far-reaching effects on the economies of iron and steel production. The objective in rail transport is to achieve maximum economy by using the optimum size and type of wagon for iron-ore traffic, and by raising the load of ore per train, and the following article describes the research undertaken on this type of transportation by B.I.S.R.A., and the conclusions drawn therefrom.

Since iron ore is a dense material, the factor limiting the carrying capacity of a wagon is not cubic content but permissible axle load.

Until quite recently the permissible load throughout the United Kingdom was 17½ tons per axle. If this were increased to, say, 22½ tons per axle, the pay load would be raised and the same tonnage of ore could be carried in fewer wagons. A detailed investigation covering all iron-ore routes is being carried out by British Railways, and in two special cases the permissible axle load has been raised to 20 and 21.3 tons respectively, while approval has been given in a third case for an increase to 22 tons. British Railways have further agreed that all new construction or rebuilding of bridges and railway lines shall be done to a standard of 22½ tons, which, in due course, will become the normal permissible loading.

WAGON DESIGN

A detailed study of wagon design has been made by the Plant Engineering Division of the British Iron and Steel Research Association, account being taken of the physical limitations imposed by the requirements of the British Railways system. The advantages and drawbacks of various designs were compared and recommendations were made on train size, wagon size and type.

The best ore wagon is the one which gives the lowest transport cost per ton of ore carried, inclusive of capital charges, cost of maintenance and repair, and operating costs. Since dispatch and reception frequently occupy more time than the actual journey, the design must be such that the wagon can be handled with maximum speed and convenience at every point.

The larger the capacity, the smaller the number of wagons which have to be loaded, shunted, weighed and emptied. The less the tare, the greater the weight of ore which can be carried in the wagon without exceeding the permitted axle loading of the unit and the tractive power of the locomotive hauling the train. Another advantage of lower tares is that less weight has to be hauled when the empty wagons are returned. It is also desirable that the length of truck per ton of ore carried should be as small as possible, since the weight of ore which can be carried in a given length of train is often limited by the length of signal blocks or intermediate sidings. Finally, the wagon should be so designed that it can be fully utilized within the limits imposed by the axle loading or loading gauge.

Bottom discharging is faster than tippling for handling large tonnages at short notices, as is often the case with imported ore, but tippler discharge is regarded as preferable for works receiving a proportion of home ore, which is often sticky and will not run out when the bottom doors are opened.

In North America and Europe large four-axle wagons are used almost exclusively for transporting bulk minerals. As an example of the designs currently being adopted may be cited one of the latest types of wagons, built to carry ore from the new Labrador Mines to the St. Lawrence, which is a four-axle bogie wagon for a gross load of 112 l.tons. On the other hand, the wagons used in Britain are almost invariably of smaller two-axle types. Recent designs include a 27 ton iron-ore tippler wagon now in common use, a 24½ ton flat-bottomed coal wagon, and a proposed 25½ ton hopper wagon for iron ore. When it becomes practicable to raise the permissible axle loading to 22½ tons, these wagons could all be re-designed to carry about 35 tons.

In view of the heavier loads which would be permissible with a higher axle load, it is noteworthy that stress measurements made by B.I.S.R.A. for a member firm on a loaded wagon (tare 23 tons) showed that when the load was increased from 47 tons to 64 tons of ore, the increase in stress did not exceed ¾ ton/sq. in. in any place; the maximum stress recorded was under 5 tons/sq. in. As a result of these measurements the railway authorities agreed to the increased load, subject to minor modifications to the wagon. The permitted axle loading was raised in this case to 22 tons.

American and European trains of four-axle wagons are lighter and shorter and consist of fewer wagons than British trains carrying the same amount of ore. Investigation has shown, however, that this is not due to the type of wagon but to the larger loading gauge and the heavier axle load allowed in other countries.

EFFECT OF LOW BULK DENSITY

When materials of low bulk density are being transported, the capacity of the train is limited primarily by the cross-section through which the load must pass, known as the loading gauge, which for an established railway system is governed by the existing track. In the case of high density materials, however, the limiting factor becomes the load-carrying capacity of the track, which is defined in terms of permissible axle loading and axle spacing. The greater the bulk density of the material carried, the closer the axles can be spaced together, thereby increasing the capacity of the train, but eventually a point is reached at which it becomes impracticable to reduce the distance between axles any further. It follows that for still denser materials the load gauge cannot be fully utilized and the capacity of the train is limited solely by the axle loading.

There is general agreement that to ride smoothly and safely wagons should have a wheel-base of not less than 9 ft., which is that of the present British iron-ore wagon. Two-axle wagons cannot, therefore, have axles spaced more closely than one every 9 ft., while three-axle wagons or four-axle bogie wagons can have an average axle spacing of about 6 ft.

At axle loads of 17½ tons, a train carrying high density materials has a higher capacity for a given length if four-axle wagons are used, a further advantage being the smaller number of units to be loaded and unloaded. A large self-emptying bogie wagon costs about £1,800-£1,900, however, and its low load/tare ratio limits its present maximum load to about 45 tons of ore. The first cost is thus more than four times that of a 25½ ton two-axle wagon for less than twice the capacity. Raising the axle load to 22½ tons would

increase the capacity to 60 tons. The use of these larger wagons would also necessitate a corresponding increase in the capacities of tipplers and weighbridges. If an assessment of handling costs showed that it was worthwhile using four-axle wagons, it would be still more economical to use the larger tipplers and weighbridges required to handle two-axle wagons in pairs.

When the axle loading goes up to 22½ tons the advantage of the four-axle wagon disappears. This is because in these circumstances home ore is light enough in relation to its bulk to fill the wagons before the axle load reaches its permitted limit, so that there is nothing to be gained by the closer wheel spacing permitted by the four-axle wagon. On the other hand, the four-axle wagon retains its advantages when carrying imported ore at the higher axle loading. This material is comparatively heavy in relation to its bulk, so that the weight limit is reached before the capacity limit. The fact that in Britain four-axle wagons have to be narrower in the body than two-axle wagons because of the permissible "throw" round curves is no objection to their use in these circumstances (i.e. when carrying heavy ore).

MEETING U.K. CONDITIONS

B.I.S.R.A. have concluded that under British conditions wagons of the two-axle type are preferable to four-axle wagons for home ore, coal, and bulk materials of light or moderate density, since they allow more to be carried in a train of given length. The present 27 ton tippler wagon costing about £400 is regarded as probably the most efficient railway wagon in the United Kingdom. Over 3,500 tippler wagons and over 2,600 hopper wagons have been built for the iron-ore traffic since the war. It is hoped to build enough of the 27 ton tippler and the 25½ ton hopper wagons to eliminate all smaller wagons from the ore trade.

Where imported ore is being handled on a fast shuttle service from docks to works, four-axle wagons are regarded as offering sufficient advantages to warrant consideration, despite their higher cost, provided that they are of the largest possible size and can be used exclusively for this purpose. In view of the relatively high cost of four-axle bogie wagons, however, it might be worthwhile to consider as a possible alternative the use of three-axle wagons such as those employed for transporting Swedish ore to Narvik for export. Three-axle wagons would be cheaper than four-axle wagons and would give equally short trains, but to handle a given quantity of ore a greater number of units would be required.

B.I.S.R.A. have further recommended that, to allow for the future increase in axle load, weighbridges and other equipment in works should be capable of handling wagons up to 45 tons gross weight. They should also be large enough to handle the new 12 ft. wheel-base coal wagons, which have a length over buffers of 24 ft. 6 in. and a height of 10 ft. 8 in. (for hopper wagons) or 9 ft. 11 in. (for tippler wagons).

Increased loads, which are particularly desirable in areas where traffic is normally congested, depend not only on the type and size of wagons, but also on track gradients, the power of the locomotives employed, and track operating conditions. Locomotives of adequate power are now becoming increasingly available. In consequence, train loads of up to 700 tons or more have become a regular feature of the ore trade, wherever the volume of traffic permits, compared with the loads of 350-400 tons which were common a few years ago. Locomotives suitable for drawing trains with loads up to 1,000 tons are already available, but many more will be needed to deal with the industry's growing requirements. In the United Kingdom, where the distances hauled are short, little would be gained by increasing train sizes much beyond 1,000 tons.

World Tunnelling Record Established in Scotland

A new world tunnelling record is claimed during operations on the St. Fillans Section of the North of Scotland Hydro-Electric Board's Breadalbane project in Perthshire. In the seven working days October 19 to 26, tunnelling crews of the Mitchell Construction Co., Peterborough, drove 557 ft. of 8 ft. 6 in. bed width through hard epidiorite rock in the St. Fillans No. 4 tunnel. The previous world record was 551 ft. set up in the United States. It will be recalled that the Mitchell Construction Co. achieved a British and European record of 428 ft., also at Breadalbane, last December, although this achievement was subsequently bettered.

NOTABLE PERFORMANCES

Notable performances in recent years include those of 379 ft. in six days at the Gateway Tunnel, near Ogden, Utah, in 1953, and an estimated figure of 488 ft. in seven days at the Carlton Tunnel, Cripple Creek, Colorado, recorded in 1940.

Other notable figures include 402 ft. in six days at the Ecumbene-Tumut scheme for the Snowy Mountains Hydro-Electric project and 111 ft. in one day at North Poudre in April, 1952. It will be recalled that the high figure of 444 ft. was recorded in the small bore hard-rock tunnel at Allt-na-Lairige earlier this year.

These figures all relate to tunnelling operations only. Similar excellent results, recorded in mine development operations have been reported recently in *The Mining Journal*.

OPERATIONAL EQUIPMENT

Starting at 11.10 a.m. on October 20 at Breadalbane, teams of nine men at the face of the 8 ft. 6 in. bed-width tunnel with two supplementary teams of seven working eight-hour shifts, had achieved 88 cycles by 11.10 a.m. on October 27. The average pull was 6 ft. 4 in. per cycle. The best time recorded for a cycle of operations was 1 hr. 30 min.

Holman drilling equipment, powered by Holman compressors, was chosen for the record attempt. Five Holman Silver 3 airleg-mounted Handrils were employed to drill the average 22-hole pattern. Atlas Diesel Coromant steels were used. In order to obtain the best possible times for the drilling part of the cycle, normal air pressures were raised to 95 lb./sq. in. at the face. During the record period each of the five machines achieved an average of over 3,000 ft. drilled.

MINIMUM OF REPLACEMENTS

To save time on changing, 8 ft. steels were used throughout and total drilling times were cut to the unusually low figure of 25 min. per cycle. The only replacement during the period were six water tubes among the five machines. Other cycle times recorded during the operation were: charging and blasting, 10 min.; clear smoke, 17 min., and mucking, 1 hr.

Holman T.60 R. compressors were used for drilling and loading. Rock clearance was effected by an Eimco Model 21 Rocker-shovel which shifted a total of 1,700 cu. yd. during the record period. Some 6,300 lb. of gelignite were used. Ruston-Hornsby diesel locos and 40 cu. ft. mine trains were used.

Rapid Sinking of First Uranium Shaft in South Africa

The Monarch Shaft of West Rand Consolidated Mines Ltd. is the first shaft in South Africa to be planned solely for uranium ore mining operations. In August, 1955, the sinking speed exceeded the previous record monthly footage for rectangular, timber-lined shafts, and in the following month the rate of sinking operations was further accelerated. The following article describes the winding gear of Fraser and Chalmers design installed at the Monarch Shaft, which initially is aiding sinking and ultimately will hoist 8,000 lb. of ore from 3,600 ft. depth every two minutes.

West Rand Consolidated Mines Ltd. in 1952 became the first gold mine in the world to produce uranium. Mining operations have now been progressed by the planning of a special shaft solely for the purpose of hoisting the uranium ores of the Monarch Reefs of the Bird Reef Series. The Monarch Shaft is notable not only for being the first in South Africa to be initiated purely for the hoisting of uranium ore, but also for the speed at which it is being established and equipped.

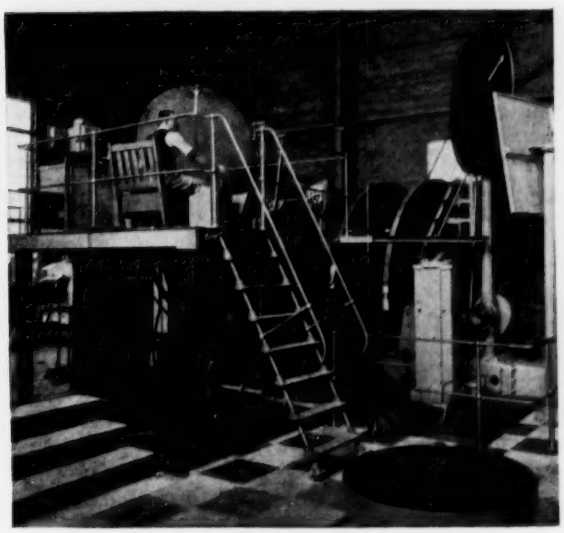
RECORD SINKING SPEED

The Monarch Shaft is of the rectangular timber-lined type and in August, 1955, the footage sunk and completely equipped was 666 ft., which exceeded by 212 ft. the previous monthly record footage for this type of shaft, which had been held by West Rand Consolidated Mines Ltd. since 1940. In September, however, even better progress was achieved and the footage completed amounted to a further 763 ft.

This September footage not only breaks the mine's recently established record for footage of rectangular timbered shaft sinking but also exceeds the previous South African record of 667 ft. of circular concrete-lined shaft completed in a calendar month and thus establishes a new world record for all types of shaft.

USE OF AVAILABLE MOTOR

In April, 1954, the British General Electric Co. (Pty.) Ltd. in South Africa learnt that a winder was required for the Monarch Shaft of West Rand Consolidated Mines Ltd. and in early June preliminary plans, employing a 900 h.p. motor already available, were approved and instructions given to proceed with the installation.



The winding equipment

The headgear and winder house

The proposals included a double-drum winder of Fraser and Chalmers design, having two clutched parallel drums 12 ft. in diameter by 5 ft. wide, and complete with twin-pinion speed-reducing gears to allow a second similar motor to be added as soon as it could be made and shipped to South Africa.

SINGLE REDUCTION GEARING

This gearing is of the single reduction type and the ratio is 9.53 : 1. The figure is rather higher than would normally have been employed but was dictated by the speed and horsepower rating of the available motor. Great care to reduce pinion deflection was taken in designing the whole gear unit and a normal working life is anticipated for the gears as a result of the special measures embodied.

To save shipping time the main mechanical parts were made from Fraser and Chalmers' drawings by South African mechanical engineering firms and were delivered to site at the beginning of February, 1955.

ULTIMATE CAPACITY

Erection of the winder was to have been completed by early April but was delayed by exceptionally heavy rains and consequently was not completed until early July. Testing and licensing followed and the winder was commissioned on July 25th. By this date the headgear, winding-house, service hoist, offices and all the other equipment of the site at the shaft top were complete or nearly so.

The winder is being employed initially to sink the shaft; its ultimate duty will be to hoist 8,000 lb. of ore from a depth of 3,600 ft. every two minutes.

MACHINERY AND EQUIPMENT

Unplasticized P.V.C.

A new plastic material designated Chemidus 2000 is now available from Chemidus Plastics Ltd. It is being supplied in the form of rigid pipe as well as solid rod and welding wire.

Chemidus 2000 is presented by the manufacturers as a specially compounded high-grade unplasticized P.V.C. which is easy to weld and form. It is claimed to possess excellent mechanical properties and chemical resistance, and should, therefore, be suitable for the carrying of corrosive liquors as well as for pipe lines designed to operate in corrosive atmospheres or in corrosive soils. The material is formulated as to be suitable for applicatoins wherein the question of toxicity arises.

Chemidus 2000 may be described in more detail as a rigid thermo-plastic, a specially blended and compounded form of straight unplasticized P.V.C., containing no plasticiser, filler or pigment. A special adhesive has been designed to make permanent joints in the material, which is half the weight of aluminium, about $\frac{1}{8}$th that of steel and less than $\frac{1}{4}$th the weight of lead. The material has the additional properties of not supporting combustion and it will not corrode, while simultaneously it has high chemical and electrical resistance, a low thermal conductivity and is easily worked and joined. Chemidus 2000 may be formed by hot forming, welding, gluing or machining. Its smooth surface reduces resistance in pipe flow. The material is unsuitable for use with ketones and aldehydes, esters and aromatic and chlorinated hydro-carbons.

Among its other properties Chemidus 2000 absorbs small quantities of water, a factor which slightly reduces its mechanical and chemical resistant properties, although the characteristic is not pronounced at normal working temperatures of up to about 60 deg. C. It may be used as a rigid material up to 60 deg. to 65 deg. C.

Large Order for Mine Winders

An order valued at over £250,500 has been obtained by The British Thomson-Houston Co., from the National Coal Board (N.E. Division, No. 2 Area) for two automatically controlled, tower mounted, electrically driven 4-rope friction winders for Brodsworth Colliery in Yorkshire. These winders are required in connection with a large reconstruction scheme at the Colliery and eventually are destined to replace the existing steam winders which are now operating in Nos. 1 and 2 shafts.

Each winder will be of the Ward Leonard type, twin-motor driven, having a total driving horsepower of 2,700, and each equipment will consist of two D.C. motors, rated at 1,350 h.p. running at 600 r.p.m. The drum for each winder will be 12 ft. in dia. and arranged to accommodate four $1\frac{7}{8}$ in. dia. winding ropes in parallel.

The D.C. motors, working in tandem, will drive the drum through a set of high-precision reduction gears of B.T.H. manufacture, specially designed to cater for any deflections likely to be associated with tower-mounted winders. Each pinion will drive on to a common spurwheel, which is coupled to the drum shaft through a forged torsion or quill shaft and a patent B.T.H.-metalastik slow-speed coupling. The gear ratio is approximately 10:1.

In the upcast shaft, winding will be accomplished by a skip and counterweight arrangement, the net load of coal per skip being 20 tons, the winder having an output of 360 tons per hour. The downcast shaft will accommodate a cage and counterweight, the former having two decks and on each deck there will be two 3-ton mine cars, giving an output of 250 tons per hour. Men and material will also be raised and lowered in this shaft. The motor-generator sets for the two winders will be located in the building interconnecting the two shafts. The winder will be automatically controlled by push buttons and interlocks and the control system will be of the closed-loop type with amplidyne exciters.

B.T.H. will be main contractors for the winder installation including the electrical portions and the main reduction gears. The sub-contract for the mechanical portions has been placed by B.T.H. with Messrs. Markham and Co. Ltd., of Chesterfield. It is expected that both equipments will be installed during 1958.

Goggle Mist in Mines and Quarries

A solution to the problem of the misting of goggles in industry is claimed by the Industrial Division of A. Power and Son, who have produced "Ucee", an odourless, mildly antiseptic, non-inflammable, demisting fluid available for mine and quarry use. "Ucee" will not evaporate and will store indefinitely.

It is stated by the manufacturers that drops applied to both sides of the goggles will clean the lens and prevent misting on either side for approximately 24 hours. "Ucee" is non-abrasive and will not damage glass, acetate and kindred substances.

Selenium Rectifiers for Cathodic Protection

The Hackbridge and Hewittic Electric Company is now supplying metal plate rectifiers for the cathodic protection of buried metal structures. The equipments are built according to a basic constructional design but the rating and general electrical design are arranged to suit individual requirements. Voltage control is provided either by transformer tapping switches or by a voltage regulating transformer.

The rectifier illustrated is a typical unit for providing a D.C. supply of up to 80 amps. 6-60 volts at an ambient temperature of up to 55 deg. C. It is for the cathodic protection of an oil pipe line in the Middle East. The rectifier stacks and regulating transformer are oil-immersed in a weatherproof tank for outdoor service, and the operating handwheel for the regulating transformer together with the measuring instruments and terminals are enclosed in a lockable box to prevent unauthorized interference.

Rectifier for cathodic protection of pipe line

METALS, MINERALS AND ALLOYS

COPPER.—Copper continues in firm demand in the United States with the big producers and the custom smelters holding to their quotations of 43 and 45 c. per lb. respectively. Good guessers are saying that keenness to buy is waning all the time, that supply has well caught up with the strike losses, that buying for inventory against high tax assessments has pretty well run its course and that when the custom smelters open their books for January delivery they will at the same time lower their prices. All this sounds plausible enough but it is always difficult, in a period of uncertainty like the present, to distinguish those who can acutely detect an undercurrent from those who read into a situation what they hope to find. Latest reports say that custom smelters have taken orders for January at less than 45 c., but there is no news of how much or at what level.

In any case, news from Chile and the Copperbelt is bound to impart some stiffening to the present range of prices; the prospect of even a moderate decline from 43 c. depends entirely on the assurance of uninterrupted supplies.

In Chile, a strike broke out on October 31 at El Teniente, Chuquicamata, and Potrerillos; it was intended as a 24-hour token strike against the status of copper industry workers as laid down in the code of labour. However, to it was added a threat of a general strike, if the miners' wage claims were turned down, and the Minister of Labour announced the failure of wage negotiations tne same day. The Government declared the mine areas to be emergency zones when the strike broke out. But as November 1 was All Saints' Day and a public holiday it was difficult to tell whether the stoppage had spilled over from a 24-hour token strike to an indefinite strike. Later in the day a settlement was reported. All that has happened so far is that the miners have agreed to go back to work and the Government have agreed to consider their grievances. This statement presumably means that the wage claim as well as the issue of status is under consideration.

In the Copperbelt there are two wage claims before the Chamber of Mines. The African Mineworkers' Union is still pressing its claim for 6s. 8d. a shift which it first pressed through an abortive strike early in the year. Conciliation has broken down and the miners' union has now asked that the claim go to arbitration. It is said that the claim would raise production costs by 35s. a ton. The other claim is by the European Union for an increase of 15 per cent in the basic pay of artisans—about 1,300 of them. It is claimed that bigger differential would encourage semi-skilled Europeans to try to attain a skilled status. This claim would cost £374,400 plus copper bonus.

Observers see in these two moves the consequences of the African advancement programme. It is said that some of the leaders of the African union, aggrieved at the failure of their strike and conscious that the benefits of the African advancement agreement were given to them rather than extracted, are anxious to re-assert their leadership and to take the initiative. The desires are natural enough but the task is a dangerous one. If the wage claim is allowed to peter out the African union will be more discredited than ever. If the claim is again pressed to a strike, the African union may not survive a defeat and, conscious of this fact, the leaders may be unable to control the extremists in the union. It may be that arbitration will produce an offer that both sides can accept, but if at arbitration the claim is totally rejected the outlook for the African union as a representative body is uncertain.

The European union is apparently anxious to pull up the lower ranks of the white workers as the Africans climb up the ladder. What is at present missing is any sure indication as to how far the union is prepared to push the claim.

LEAD.—In the early part of last week this metal suffered a little from the flurry of enthusiasm that had pushed up zinc and which at one time also looked likely to send New York lead to 16 c. per lb. The effects of a certain amount of overbuying had to be worn off. However, the market has now regained its equilibrium and with all talk of a price increase for the time being forgotten is steady and active if rather featureless. The motor producers are making plans to make about as many cars in 1956 as they made this year so that the lead industry is assured of reasonable support from the battery makers.

TIN.—Tin has continued very firm in New York with spot straits tin well over 96 c. and actually touching 97 c. per lb. on November 1. One factor in the continuing strength of tin has been the strike of Nigerian miners which is now into its third week. The loss of Nigerian tin is not yet, of course, a serious market factor but it has certainly had its effect on sentiment and the price fell back to 96.75 c. on news of a Nigerian settlement.

What has also affected sentiment in the U.S.A. (apart from the fact that President Eisenhower certainly seems likely to be fit enough to see his term of office through) is the growing conviction that there is no threat to the current American boom in sight before mid-1956 at the earliest. In spite of the fact that the peak of the canning season has passed, tinplate makers are fully booked; an unusual state of affairs at this time of the year. Moreover, the general optimism has been translated to mean that 1956 will be at least as good as 1955—an outstanding year—for tinplate production. Tinplate deliveries are good but producers have apparently no fears about making for stock. All this, of course, without the help of British demand which has fallen away recently but which may well have to be renewed before the new British tinplate mills are working. Even if mid-1956 is seen by some as the earliest that the boom could crack it is also the pre-election period and nobody doubts that the Administration will jump at the slightest chance of relaxing credit, lightening taxes and generally permitting consumption to expand. Indeed 1956 is already looking so good that there is talk of consumers stocking tinplate as a safeguard against the possibility of a midsummer steel wage demand (which seems completely inevitable), and a consequent strike (which is by no means impossible).

Some information about the growth in the use of tinplate for soft drinks has been given by the marketing manager of American Can Company. He estimated that in 1955 500 million cans of soft drinks will have been bought, compared with about 250 million in 1954, the first year in which they were marketed. Actual production of cans in 1955 at 350 million would be about 125 million less than in 1954; but of last year's production about 250 million were not marketed till this year. Manufacture and marketing are now better matched, and at the close of 1955 only a "normal" inventory will be carried over. He predicted "a vigorous future for canned soft drinks".

ZINC.—On November 1 St. Joseph Lead announced that it would raise the premium on special high grade zinc to 1¼ c. per lb. with effect from December. Only the American Metal Company has not yet fallen into line. Since the producers which had first announced the increase were themselves sold out till December the rise will in practice be uniform. The failure to hold East St. Louis zinc at 13½ c. for prime western grade and the subsequent successful raising of the premium on special high grade to 1¼ c. has had the effect of convincing consumers that the producers will now be content with 13 c. for their output and that a period of price stability is now in store. Probably they are right because an attempt to stick up the price that does not come off is an undignified affair that has to be lived down. However Mr. Herres, vice-president of Combined Metals Reduction has sent a vigorous reply to the secretary of the American Die Casting Institute who had protested about the earlier abortive rise of ½ c. His letter is largely a repetition of stock arguments in favour of protection for the American mining industry, but it is interesting to note that what he is impenitently defending is that rise of ½ c. Meanwhile, it is worth recalling that although American industry is booming it is becoming fiercely competitive and this places severe limits to the extent to which manufacturers can pass on to customers rises in production costs. (In this connection it is notable that the U.S. retail price level has been remarkably steady in 1955.) Manufacturers cannot avoid wage increases but they are looking more and more to stable raw material prices to help them keep end prices down. Thus the American lead-zinc industry is in the unfortunate position of having suffered more than most from the 1953-54 recession while benefiting rather less than most from the 1955 boom. But, of course, this is only a very charitable way of saying that American producers are high-cost producers.

MANGANESE.—The American Manganese Producers' Association recently filed a brief with the Tariff Commission in Washington calling for the re-imposition of the full measure of import duty on manganese as in force in 1930 in order to protect U.S. producers from the dumping of high grade manganese supplies on the U.S. market. Offhand, we have no idea what the duty was in 1930, but in any event this action surely raises in provocative form the query "just how parochial can you get?" Certainly the request appears very odd against a background of the U.S.A.'s heavy dependence on imported manganese.

MAGNESIUM.—Production figures for this metal are never easy to obtain which makes the recent U.S. Bureau of Mines' estimate for last year the more welcome albeit late. The Bureau puts world production of primary magnesium last year at 140,000 s.tons compared with 170,000 s.tons in 1953. Of this total, just under 70,000 s.tons was domestic production (against 93,075 s.tons in 1953). Canadian production remained substantially unchanged at 6,600 s.tons, while U.K. production (including secondary metal) was down at 5,577 s.tons against 5,936 s.tons. Russian production is estimated to have fallen from the high level of 55,000 tons in 1953 to 45,000 s.tons last year.

According to Mr. J. D. Hanawalt, vice-president of Dow Chemical, magnesium consumption in the U.S. has risen to the highest point in any peacetime year and, for the first time, commercial sales will exceed those for military use. He estimates that total U.S. consumption of magnesium is running at better than an annual rate of 75,000 s.tons, compared with a peak consumption of some 193,000 s.tons in 1943, when almost all production went for military use.

NICKEL.—According to a Reuter message from Paris the French Price Control Administration is expected shortly to raise the price of refined nickel from 745 frs. per kilo to over 800 frs. At the present price, which has been in force since last December, French nickel is already considerably above world prices. The situation is not, however, without its compensations, as French consumers have first call on the relatively high cost deposit of New Caledonia, which has at least meant that they have been able to cover their requirements. Moreover, it is understood that Le Nickel hopes to reduce production costs as a result of its modernization programme. A new investment programme of something over £3,000,000 is aimed to increase the company's present annual output of 8,400 tonnes to a new level of 10,000 tonnes per annum.

Inco have announced this week a ½ c. per lb increase in their domestic Canadian price for refined metal from the Port Colborne refinery. This brings the Canadian price to 63 c. The increase is stated to be in compensation for recent changes in foreign exchange rates, and does not imply any alteration in the company's basic export price.

The U.S. Government-owned Nicaro plant in Cuba (which recommenced operations at the beginning of 1952 having been mothballed after World War II) is now running at an annual rate of over 15,500 s.tons of nickel per annum and has produced a total of about 50,000 s.tons since it was reopened. This expansion in production has been going on side by side with plant expansion which will eventually increase capacity by about 75 per cent over the present rate of output.

TITANIUM.—Du Pont continue to bring down their price for titanium metal sponge. Last April they brought the price of A.1 grade down to $3.95 (a cut of 55 c.) and now they have reduced this price a further 20 c. to $3.75 with A.2. grade priced at $3.25 and A.2. fines to $2.75. At the same time the company have announced improved specifications for A.1. grade including a lowering of the Brinnell hardness number to a maximum of 125, indicating a more ductile and workable metal. This is expected to encourage production of high strength titanium based alloys and to simplify for fabricators the problem of recycling scrap.

In this connection it is of interest that the *Financial Times* was suggesting last week that it was believed that the development of the I.C.I. process for producing raw titanium was nearing the point where a substantial reduction in price might be expected

TUNGSTEN.—Burnt Hill Tungsten Mines Ltd., of New Brunswick, claims to have established the largest known deposit of wolframite in North America and now plans to double the present 150 tons a day capacity. The company has already made two shipments of concentrate assaying around 70 per cent.

London wolfram prices have continued to ease this week in the absence of buyers and latest quotations are now around 249s./253s. per l.ton compared with about 272s./276s. a month ago.

The London Metal Market

(From Our Metal Exchange Correspondent)

The copper market was influenced on Monday by reports of strike action by the Chilean copper-workers and the report that the Northern Rhodesian European Mineworkers' Union's negotiations on wage increases had reached deadlock. By the afternoon the London market had advanced about £17 from the closing prices on Friday afternoon.

It is understood, however, that the Chilean workers have returned on the government's assurance that their claims would receive consideration, and the market promptly dropped back to more or less the previous levels. The supply position seems to be gradually improving although metal for early delivery is not easily obtainable. Given freedom from labour troubles the availability of supplies should continue to improve.

Tin has been a firm market with consumptive demand keeping up well. The stocks in Metal Exchange warehouses declined sharply last week, the total now standing at the low figure of 342 tons, resulting in an increase in the backwardation to around £20 per ton. An increase in the warehouse stocks would be welcomed and would no doubt lead to a reduction in the backwardation. It is thought likely that the strike of Nigerian mineworkers which commenced on October 17 will be called off before the end of this week. On Thursday morning the Eastern price was equivalent to £763¼ per ton c.i.f. Europe.

Lead has been a steady market and fluctuations in price have been small. Consumption continues on a good scale, but the increased purchase tax on motorcars and the restriction on capital expenditure may eventually lead to some curtailment in consumption for the battery, building and cable industries.

In zinc there has been no feature of note and price movements have been negligible.

Closing prices and turnovers are given in the following table :—

	October 27		November 3	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Copper				
Cash	£357	£357½	£364	£365
Three months	£344	£345	£350½	£351
Settlement	£357½		£365	
Week's turnover	3,325 tons		5,350 tons	
Tin				
Cash	£770	£771	£768	£770
Three months	£754½	£755½	£750	£752
Settlement	£771		£770	
Week's turnover	580 tons		710 tons	
Lead				
Current half month	£106¾	£106¾	£106½	£106½
Three months	£106¾	£106¾	£106	£106¼
Week's turnover	3,525 tons		4,000 tons	
Zinc				
Current half month	£90¾	£91	£90¾	£91
Three months	£90¼	£90¾	£90¼	£90½
Week's turnover	5,500 tons		3,450 tons	

OTHER LONDON PRICES — NOVEMBER 3

METALS

Aluminium, 99.5%, £171 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £210 per ton
Crude (70%) £200 per ton
Ore (60% basis) 23s. 6d./24s. 6d. nom. per unit, c.i.f.
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 11s. 6d. lb.
Chromium, 6s. 11d./7s. 4d. lb.
Cobalt, 21s. lb.
Gold, 249s. 8¾d.
Iridium, £30 oz. nom.
Manganese Metal (96%-98%) £269 according to quantity
Magnesium, 2s. 4d. lb.
Nickel, 99.5% (home trade) £519 per ton
Osmium, £24/27 oz. nom.
Osmiridium, £40 oz. nom.
Palladium, £7 10s./£8 0s. oz.
Platinum U.K. and Empire Refined £29 oz. Imported £37 10s./£38 oz.
Rhodium, £40
Ruthenium, £17 oz.
Quicksilver, £90 10s./£91 ex-warehouse
Selenium, 72s. nom. per lb.
Silver, 79½d. f.oz. spot and 79¼d. f'd
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 65% 8s. 6d. c.i.f.
60% 8s. 3d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (semi-friable) 48% £15 2s. 6d. per ton c.i.f.
,, Refractory 45% .. £14 2s. 6d. per ton c.i.f.
,, Smalls 42% .. £12 2s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26-£27 d/d
Magnesite, Raw .. .. £10-£11 d/d
Molybdenite (85% basis) .. 105s. 0d.-108s. 0d. per unit c.i.f.
Wolfram and Scheelite (65%) .. 249s. 0d./253s. 0d. c.i.f.
Tungsten Metal Powder (98% Min. W.) .. 20s. 7d. nom. per lb. (home)
Ferro-tungsten (80%-85%) .. 17s. 9d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £39 3s. 9d. d/d per ton
Ferro-manganese, home .. £54 10s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46%-48%) basis 100s. freight. .. .. .. 84d. per unit c.i.f.
Manganese Ore (38%-40%) .. 69d. per unit
Brass Wire .. .. 3s. 4½d. per lb basis
Brass Tubes, solid drawn .. 2s. 9½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Stock markets were slack in the post-budget period and investors were disposed to be cautious in the face of coming wage demands which are expected to be substantial. Gilt-edged which were an uncertain market turned firmer in late dealings following the sharp rise of sterling overseas. This advance was caused by bear covering in foreign capitals which not long ago were selling short of pounds.

Among Kaffirs trading conditions were very idle and many prices moved lower. There was little support from the Continent or Johannesburg and the strength of sterling did little to help gold shares. Among finance houses Anglo-Transvaal hardened due to the better October returns from this Group and there was investment buying of Consolidated Goldfields in front of the dividend expected next month. Union Corporation were unchanged despite reports appearing in the South African press that the flotation of a mine in the Kinross area may be expected before long.

Among individual Rand mines, prices were little changed, and the October returns were the main point of interest. Blyvooruitzicht Gold Mining Company's lower profits caused these shares to slip back, but, in contrast, Brakpan went ahead on the sharply improved returns. There was some interest in Buffelsfontein due to the fact that the option to take up two new shares at 16s. for every three held falls due this month. The new shares and old shares ex rights are changing hands in the neighbourhood of 27s. The improved figures and gold recovery by Hartebeestfontein caused a rise in this stock and Springs Mines also gained the turn due to the recovery in the profit figures.

In the O.F.S. an explosion at Free State Geduld which caused four casualties brought the shares down to their lowest level this year. Whereas prices generally in this field fell away, Harmony and Virginia held their own due to the better October figures. Loraine again reported a loss, although slightly lower than September. Gloom overshrouded Freddies Consolidated as there was no improvement in the outlook for this mine.

Among miscellaneous gold shares, there was some demand for Champion Reef and Nundydroog due to possibilities concerning break-up values if the mines are nationalized. Camp Bird slipped back when it became known that there would be no capital distribution. The lower ore reserve position disclosed by Falcon Mines caused the shares to be marked down. St. John D'el Rey improved although the financial position in Brazil continues to give cause for anxiety.

Coppers were an unsettled market due to the erratic behaviour of the metal price. This rose sharply due to reports of an impending strike in Chile but fell back again when it became known that this had been settled. The continuing high level of the metal has brought about the use of many substitutes in industry, particularly of plastics. Two other bear factors in this field were the deadlock in wage negotiation and market disappointment over the dividends recently announced by the leading companies. It is understood that the improved figures from Messina were partly due to the new Umkondo venture. The mine has another Rhodesian copper interests in the process of development and is negotiating with the local government concerning the development of an iron ore field. The chairman's statement that Esperanza may well need fresh capital in the near future depressed these shares.

Tin issues were generally slightly firmer following improvement in the metal price. Lower stocks in the U.K. caused a sharp advance in cash tin. Renong declared a special bonus now that No. 2 dredge has finished working its rich area. In the Nigerian and miscellaneous group, Amalgamated Tin remained unchanged. There was no news concerning the strike position at the property. Beralts were a good market, the chairman emphasized the strong cash position of the company.

Lead/Zincs were selectively better and Consolidated Zinc and New Broken Hill outstanding. There was also strong demand for San Francisco Mines. In the miscellaneous section the Associated Manganese resolution concerning the buying out of the subsidiary company was passed and Consolidated Murchison jumped on hopes of an improvement in the final distribution.

Finance	Price Nov. 2	+ or — on week
African & European	3/6	—6d
Anglo American Corpn.	8/6	—6d
Anglo-French	22/-	
Anglo Transvaal Consol.	26/3	+7½d
Central Mining (£1 shrs)	43/3	—3d
Consolidated Goldfields	60/-	+2/6
Consol. Mines Selection	38/1½	—7½d
East Rand Consols.	1/10½	—1½d
General Mining	4¼	
H.E. Prop.	7/9	
Johnnies	41/3	+1/-
Rand Mines	3⅛	
Rand Selection	43/9	+1/3
Union Corporation	48/6	
Vereeniging Estates	4⅜	—⅛
Writs	38/1½	—7½d
West Wits	38/3	+9d
Rand Gold		
Blyvoors	26/6	—3d
Brakpan	6/9	+6d
Buffelsfontein	35/-	+3d
City Deep	11/-	
Consol. Main Reef	21/10½	
Crown	2⅛	+⅛
Daggas	2¼	—⅛
Dominion Reefs	25/-	—6d
Doornfontein	24/3	—3d
Durban Deep	31/3	
E. Champs	4/9	—3d
E. Daggas	10/-	—3d
E. Geduld (4s. units)	30/9	—3d
E. Rand Props.	2⅛	
Geduld	4¼	
Govt. Areas	6/3	
Grootvlei	22/9	
Hartebeestfontein	35/6	+6d
Libanon	8/-	—3d
Luipaards Vlei	18/3	+3d
Marievale	21/6	—3d
New Kleinfontein	6/6	+3d
New Pioneer	12/6	
Randfontein	49/3	—3d
Robinson Deep	15/5	—6d
Rose Deep	10/6	+6d
Simmer & Jack	4/-	
S.A. Lands	23/9	+7½d
Springs	3/9	+1½d
Stilfontein	27/-	+3d
Sub Nigel	36/3	
Vaal Reefs	30/-	
Van Dyk	3/9	
Venterspost	14/3	
Vlakfontein	17/9	
Vogelstruisbult	30/6	—3d
West Driefontein	5½	+⅛
Rand Gold contd.		
W. Rand Consolidated	39/4½	—7½d
Western Reefs	36/10½	—4½d
O.F.S. Gold		
Freddies	7/9	+6d
Freddies Consolidated	4/6	—3d
F.S. Geduld	3⅛	—⅛
Geoffries	14/6	—6d
Harmony	30/3	
Loraine	6/9	—6d
Lydenburg Estates	15/-	—7½d
Merriespruit	10/3	+9d
Middle Wits	13/6	
Ofsits	61/-	—1/6
President Brand	65/7½	—7½d
President Steyn	33/3	—3d
St. Helena	27/3	—3d
Virginia Ord.	11/6	
Welkom	17/3	—3d
Western Holdings	3⅛	—⅛
West African Gold		
Amalgamated Banket	2/-	
Ariston	5/10½	+1½d
Ashanti	21/9	+9d
Bibiani	4/-	
Bremang	1/3	
G.C. Main Reef	2/6	
Konongo	3/-	
Lyndhurst Deep	1/4½	
Marlu	9d	
Taquah	1/10½	—1½d
Western Selection	9/1½	
Australian Gold		
Gold Mines of Kalgoorlie	12/6	
Great Boulder Prop.	10/7½	—1½d
Lake View & Star	17/6	—6d
Mount Morgan	22/-	+3d
North Kalgurli	7/-	+1½d
Sons of Gwalia	3/6	
Western Mining	9/3	+3d
Miscellaneous Gold		
Cam & Motor	9/-	—1½d
Champion Reef	5/9	+1/-
Falcon Mines	6/6	—3d
Globe & Phoenix	25/-	
G.F. Rhodesian	6/-	—3d
Metapa	1/1½	
Mysore	3/1½	
Nundydroog	7/9	+4½d
Ooregum	4/-	—3d
St. John d'El Rey	17/3	+1/-
Zams	53/9	+7½d
Diamonds and Platinum		
Anglo American Inv.	8¼	—¼
Casts	30/3	+1/3
Cons. Diam. of S.W.A.	7½	
De Beers Defd. Bearer	6¼	—⅛
De Beers Pfd. Bearer	16¼	
Pots Platinum	10/9	+6d
Watervaal	16/6	
Copper		
Bancroft	40/9	+3d
Chartered	71/-	+9d
Esperanza	3/3	—3d
Messina	8¼	—¼
Nchanga	13⅛	—¼
Rhod-Anglo-American	5⅞	—⅛
Rhod-Katanga	27/3	+9d
Rhodesian Selection	45/3	—1/-
Rhokana	40½	—¼
Rio Tinto	3⅝	—⅛
Roan Antelope	24/10½	—1/3
Selection Trust	3⅝	—⅛
Tanks	7⅛	—⅛
Tharsis Sulphur Br.	6¼	
Tin (Eastern)		
Ayer Hitam	23/3	+6d
Gopeng	8/9	+1½d
Hongkong	7/3	—3d
Ipoh	21/6	
KanuKamunting	9/7½xD	—4½d
Kepong Dredging	3/3	—3d
Kinta Tin Mines	15/6	+1½d
Malayan Dredging	9/7½	+3d
Pahang	12/9xD	+1½d
Pengkalen	11/3	+6d
Petaling	9/9xD	—3d
Rambutan	20/3	+6d
Siamese Tin	8/6	+10½d
Southern Kinta	16/6	—3d
S. Malayan	8/1½	
S. Tronoh	8/3	+1½d
Sungei Kinta	15/9	
Tekka Taiping	6/9	+3d
Tronoh	9/-	—1½d
Tin (Nigerian and Miscellaneous)		
Amalgamated Tin	11/10½	
Beralt Tin	33/6	+1/3
Bisichi	5/3	
British Tin Inv.	23/1½	+7½d
Ex-Lands Nigeria	2/4½	
Geevor Tin	14/6	+1½d
Tin (Nigerian and Miscellaneous) contd.		
Gold & Base Metal	2/-	
Jantar Nigeria	6/10½	
Jos Tin Area	14/3	
Kaduna Prospectors	2/-	
Kaluna Syndicate	3/-	
London Tin	9/3	+3d
United Tin	1/10½	
Silver, Lead, Zinc		
Broken Hill South	56/9	+3d
Burma Corporation	2/10½	—1½d
Consol. Zinc	54/-	+2/4½
Lake George	12/-	—6d
Mount Isa	61/6	—3d
New Broken Hill	43/6	+3/1½
North Broken Hill	78/6	—10½d
Rhodesian Broken Hill	13/6	—3d
San Francisco Mines	27/-	+2/3
Uruwira	6/-	—4½d
Miscellaneous		
Base Metals and Coal		
Amal. Collieries of S.A.	50/-	
Associated Manganese	37/9	+6d
Cape Asbestos	10/7½	+4½d
C.P. Manganese	13/3	—6d
Consol. Murchison	62/6	+4/4½
Natal Navigation	2⅛	
Turner & Newall	100/9	+3/9
Wankie	18/1½	+6d
Whitbank Colliery	4¼	
Canadian Mines		
Dome	$29	
Hollinger	$35½	—½
Hudson Bay Mining	$119	+4
International Nickel	$133	—3
Mining Corpn. of Canada	£7.½	—⅛
Noranda	$96	—1
Quemont	£9½	
Yukon	4/1½	
Oil		
Anglo-Iranian	54⅝xD	+⅛
Apex	31/-	+9d
Attock	40/6	
Burmah	3⅛	+⅛
Canadian Eagle	48/-	+9d
Mexican Eagle	23/3	
Shell	6⅛	+⅛
Trinidad Leasehold	41/6	+4/9
T.P.D.	27/9	+2/3
Ultramar	28/9	+6d

COMPANY NEWS AND VIEWS

Rand and O.F.S. Returns for October

Profit figures from Rand and O.F.S. gold producers during the month of October were based on a gold price of 250s. per oz. as compared with 250s. 6d. in September.

Most notable amongst the returns, which failed to stimulate enough interest in the market to arrest its recent steady decline, was the disclosure that Hartebeestfontein's profit had risen sharply to £110,002 from £93,872. Costs at this property remained static but throughput advanced to 52,000 tons and grade moved up to 8.9 dwt. from 8.4 dwt. per ton. Harmony made a good showing with an increase of 2,000 tons milled and costs down by 4d. Virginia also made the sharp gain in output of 7,000 tons. Costs at this property declined by 4d. and profits—inc'uding earnings from uranium and acid—moved up to £83,127 from £64,696.

Company	October, 1955 Tons (000)	Yield (oz.)	Profit† (£000)	Year ends	Current Financial Year Total to date Tons (000)	Yield (oz.)	Profit† (£000)	Last Financial Year Total to date Tons (000)	Yield (oz.)	Profit† (£000)
Gold Fields										
Doornfont'n	51	20,669	84·3	J	203	81,380	339·6	200	66,440	331·4
Libanon	98	21,302	60·8	J	391	84,483	238·7	384	80,552	203·0
Luipaards V.	123	18,573	45·6	J	499	74,575	*a*212·3	441	86,887	181·6
Rietfontein	27	6,070	20·1	D	265	59,782	207·7	272	67,027	235·0
Robinson	87	17,709	17·4	D	832	177,170	200·9	990	227,184	268·8
Simmer	120	19,949	18·1	D	1 195	99,531	174·1	1,253	202,529	130·1
Sub Nigel	67	21,032	81·1	J	266	84,437	329·7	265	87,332	379·6
Venterspost	124	28,911	78·4	J	495	115,419	324·1	425	104,558	248·0
Vlakfontein	39	14,261	72·2	D	387	138,022	729·0	386	138,225	716·3
Vogels	103	26,485	145·1	D	1,029	*b*265,188	1303·1	1,023	260,109	1095·9
West Drie	71	55,150	437·1	J	284	219,207	1746·4	208	157,065	1218·7
Anglo American										
Brakpan	109	18,640	18·5	D	1,069	182,471	152·7	1,103	186,073	136·7
Daggas	214	49,006	296·6	D	2,247	513,300	3142·7	2,223	515,129	3175·9
East Daggas	94	15,651	40·8	D	958	159,634	557·0	934	158,424	465·4
P. Brand	51	40,832	337·7	S	51	40,832	337·7	38	25,404	185·3
P. Steyn	81	29,001	160·3	S	81	29 001	160·3	62	20,181	83·9
S.A. Lands	88	17,248	52·0	D	934	177,920	555·6	1,011	186,175	549·4
Springs	125	15,594	15·3	D	1 205	156,649	96·6	1 285	179,448	77·1
Welkom	81	16,456	16·0	D	796	157,917	107·8	714	144,143	56·4
W. Holdings	72	27,168	160·8	D	665	247,422	1314·5	478	170,025	704·3
W. Reefs Ex.	117	22,820	58·1	D	1,171	223,054	557·0	1 157	226,678	648·4
Central Mining										
Blyvoor	102	58,166	427·0	J	434	245,425	1855·0	425	242,756	1880·8
City Deep	165	31,311	8·4	D	1,611	305,894	21·9	1 637	312,197	157·4
Cons. M.R.	178	24,639	22·9	J	710	99,078	89·1	730	102,496	122·4
Crown	306	47,738	49·2	D	3,014	378,850	499·7	2,880	454,932	501·5
D. R'poort	191	31,585	52·7	D	1,815	305,882	504·2	1,787	294,887	468·8
E. Rand Pr'p	215	55,418	189·1	D	2,131	519,123	1650·6	2,044	462,654	1244·9
Harmony	73	27,384	142·1	J	478	101,109	516·7	85	28,381	77·3
Modder B.	56	5,550	1·4	D	565	56,854	10·7	567	59,061	26·7
Modder E.	126	13,312	9·2	J	522	54,625	34·0	478	54,500	54·4
Rose Deep	47	7,287	L5·5	D	580	90,295	57·9	706	107,275	116·0
Welgedacht	34	3,864	0·9	J	136	15,330	2·5	131	15,419	6·7
J.C.I.*										
E. Champ.	20	1,441	6·3	D	199	15.591	‡61·5	222	21,525	62·5
Freddies C.	77	13,066	L49·9	D	812	L142,773	L385·1	811	134,107	L178·4
Govt. G.M.	247	30,963	*d*16·3	D	2,540	319,390	244·4	2,590	338,039	316·5
Randfontein	267	27,127	*e*100·3	D	2,608	285,111	‡945·1	2,850	370,650	343·1
Union										
E. Geduld	149	46,052	345·3	D	1,494	459,821	3469·7	1,363	422,198	3129·9
Geduld Prop	104	16,495	45·4	D	925	165,055	452·4	930	151,559	290·4
Grootvlei	192	41,905	250·2	D	1,942	420,518	2457·2	1,807	385,762	2156·5
Marievale	72	18,718	92·2	D	725	185,259	893·6	659	167,956	754·3
St. Helena	102	28,768	152·9	D	1,040	264,148	1338·1	843	188,578	577·1
Van Dyk	80	12,769	4·1	D	802	131,928	23·3	783	134,670	17·2
General Mining										
Ellaton	31	8,027	31·5	D	307	88,070	415·1	267	81,469	412·5
S. Roodep't.	28	*h*6,195	22·3	J	111	24,882	89·3	111	23,916	81·9
Stilfontein	86	33,762	209·2	D	843	331,160	2075·8	822	286,860	1703·5
W. Rand C.	230	*h*24748	227·7	D	2,364	272,048	*f*2246·3	2278	286,474	1880·3
Anglo-Trans aal										
Harteb'stf'n	52	23,048	110·0	J	193	77,197	334·1	—	—	—
N. Klerks.	11	*g*1,303	4·0	D	112	3,849	7·6	111	9,512	L11·9
Rand Leases	178	27,768	23·9	J	746	117,515	132·1	738	123,995	175·2
Village M.R.	34	5,045	9·7	J	138	20,331	38·8	138	20,722	42·5
Virginia	72	15,516	100·1	J	267	56,433	*i*268·8	45	8,483	5·3
Others										
Nigel Gold	31	3,605	0·5	D	272	35,885	L17·4	275	42,644	17·3
W. Nigel	18	3,972	8·9	J	73	15,889	33·9	70	15,745	38·5

* Working profit figures includes Sundry Revenue.
† Working profit.
‡ Gold and Uranium.
L indicates loss.
a including Bird Reef, milled 33,000 tons, recovered 1,526 oz., profit £22,300 from gold and uranium after allowing loan repayment.
b Including £46,000 uranium profit—before loan and instalment repayments of £38,700.
d Including revenue from pyrite.
e Including revenue from uranium and acid.
f After crediting £286,000 estimated profit from uranium.
g After crediting £7,000 from uranium.
h Excluding uranium profit which is declared quarterly.
i After crediting £74,791 from acid and uranium; before deducting £16,950 plant loan repayment.

Amongst the older producers Brakpan, whose development results in recent months have shown considerable improvement, milled 4,000 more tons; reduced working costs to 39s. 5d. from 40s. 9d. and made a working profit of £18,485 compared with £12,019 during the previous month. Springs also dropped its costs and profits moved up to £15,340 from £13,203.

At President Brand tonnage increased by 1,000 tons and profits to £337,720 from £335,570. Reflecting, to some extent, dissatisfaction with this mine's year-end ore reserve position, President Brand 5s. ordinary shares now stand at their lowest level for 1955 of around 64s. At this price they are an attractive buy and, apart from their intrinsic merits, would be amongst the first to participate in any Kaffir market revival. Although present conditions make such an event seem remote to say the least, a turn around must eventually follow constantly sliding prices. With this in mind investors would be well advised to watch the market carefully during coming weeks.

Dominion Reef's September Quarterly

Total tonnage treated by Dominion Reefs (Klerksdorp) during the three months ended September 30, 1955, amounted to 132,870 tons. These operations yielded a net revenue from uranium of £224,587 which together with £670 representing gold and sundry revenue made up a total of £225,257. Mining costs and overhead expenses not directly chargeable to uranium operations totalled £24,188 leaving a profit for the quarter of £201,069. A recent statement from the company anticipates that profits during the current quarter should be no lower than those during the three months ended September 30.

An interesting feature of the quarterly report concerned the company's uranium plant which was handed over by the General Mining and Finance Corporation on September 1, 1955, and has since operated under the technical control of New Union Goldfields. The plant, it is stated, operated satisfactorily for the whole of the three months, while normal "teething troubles" are steadily being overcome. Moreover, as shareho'ders have already been told, it has been ascertained that the plant's capacity is greater than the 40,000 tons per month throughput originally envizaged. Permission has, therefore, been obtained from the Atomic Energy Board to operate to capacity by the addition of newly mined ore of no lesser grade than that already being fed from the dump. Although experiments to determine maximum economic tonnage are still in progress a rate of about 50,000 tons per month is expected.

Ashanti's Eaton Turner Shaft Reaches Final Depth

The September quarterly report from the Ashanti Goldfields Corporation states that the new Eaton Turner shaft has reached its final depth of 4,354 ft. It must be remembered, however, that the ore of high value which lies in this area cannot be extracted until considerable development and construction work has been completed. Profit for the company's financial year to September 30, subject to tax, has been estimated at £842,957. This compares with the adjusted figures for 1953-54 of £785,205.

Esperanza Needs Further Finance

As foreshadowed last year trading profits after working expenses of the Cyprus Sulphur & Copper Company—virtually owned by the Esperanza Copper and Sulphur Company—during the year ended March 31, 1955, showed a substantial drop to £8,560 from £99,063 during the preceding year. This was due to delayed deliveries of equipment to the Limni Mill; shortage of water; teething troubles at the Limni Mill; a large increase in stocks awaiting shipment, and a substantial rise in rates of pay.

In his statement to shareholders Mr. A. Hedley Williams referred to the company's need for further finance. This, he said, was required for additions to the milling plant; the acquisition of more drilling facilities; further electrification; building a modern hospital and additional excavating and handling plant. No suggestion was, however, offered as to how this extra money would be obtained and some indication of this may therefore be given at the meeting which is to be held in London on November 29. As the company has already expressed its intention of not making further issues of capital, the sum required may take the form of a loan.

Following an initial quarterly report in respect of the current financial year issued last July which reported a mine operating profit of £68,167, further figures quoted by Mr. Williams in respect of the six months now completed may be regarded as encouraging. Mine operating profit, he stated, had exceeded £110,000 and the company could look forward to gradually increasing recovery of all Limni's valuable constituents which include copper, gold, silver and sulphur.

With the present political situation in Cyprus very much in the minds of U.K. investors, it was particularly good news to hear that Esperanza's relation with both Greek and Turkish employees at the mine remained favourable. This did not, however, help the company's shares which fell to a low point of 2s. 9d.

London and African's Higher Share Dealing Profits

Profits from realization of investments earned by London & African Mining Trust during the year ended September 30, 1955, made a sharp advance over those of the previous year. This gain largely offset the fall in dividends and interest received and resulted in total revenue at £49,596 being little changed from £51,716 earned during the previous year.

Year to Sept.30	*Total Revenue* dividends sh. deals*		*Net Profit*	*Dividends*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1955	19,504	29,091	38,447	16,172	21,388	16,172
1954	28,887	18,960	42,254	12,891	15,565	15,285

*In addition sundry revenue of £1,001 (1954—£3,869).

During the past financial year the opportunity was taken of selling shares which had been held for some time and were considered to have had little prospect of appreciation. While the consequent loss incurred lowered profits, the lack of dividends from these holdings reduced the investment income. Proceeds of sales were utilized to increase holdings in Nigerian tin and columbite companies. The portfolio was also further extended by purchases of shares in Eastern oil companies.

Mr. W. J. C. Richards is chairman. Meeting, London, November 10.

Rhodesian Corporation Bids for Nigerian Consolidated

Proposals for the previously foreshadowed bid by Rhodesian Corporation for Nigerian Consolidated Mines have been announced. The transaction is to be conducted on a share offer basis and will involve the issue by Rhodesian Corporation of 618,550 shares of 3s. 4d. These shares will rank equally with the existing shares after the date of allotment.

The directors of both companies recommend the scheme as being fair and reasonable. It is stated that amalgamation will bring the combined book value of Rhodesian Corporation's net assets to approximately £1,234,510 against an issued capital after the scheme of £1,080,870.

Extraordinary meetings of Nigerian Consolidated and Rhodesian Corporation have been called for November 18 and December 19 respectively to consider the necessary resolutions.

Drop in Falcon's Ore Reserves

A considerable drop in ore reserves tonnage available at Falcon Mines' Dalny property, sited in Southern Rhodesia, to 457,000 from 548,500 tons, took place during the year ended September 30, 1955. On the other hand, the average value was higher at 4.3 dwt. of gold per ton as compared with 4.2 dwt. while the ore body width fell to 103 in. against 112 in. as at the end of the previous year.

The quarterly report for three months ended September 30, 1955, in which the above ore reserve details were published, also disclosed a decline in profits from Dalny, Sunace and Bay Horse Mines to £31,765 from £37,693 during the June quarter. Profits from accumulated concentrates amounted to £2,236 but revenue from this source will now come to an end due to the fact that the stockpile has been completely retreated in the roasting unit.

Modification to Portuguese Export Tax on Beralt's Shipments

At the meeting of Beralt Tin and Wolfram, Mr. Gates, the chairman, referred to the punitive taxation faced by Beralt Tin and Wolfram which during the past few years had taken a high proportion of profits and would unhappily continue to do so during the present year.

It will be recalled that the company is placed in an extremely inequitable position in that U.K. Double Taxation Relief is not obtained because of the Portuguese authorities' decision to collect their dues in the form of an export tax rather than a charge on income. While representations by the company to the Royal Commission on Taxation of Profits and Income resulted in no proposal for the solution of this problem, a recommendation was, however, made that would alleviate the position if it were to be adopted. This would entail the establishment of a special category of companies known as "Overseas Trade Corporations" which would be subject to U.K. tax on distributed profits only.

In a situation which holds out but little promise of a change for the better in the near future, Mr. Gates' disclosure that in November, 1954, the Portuguese export tax had been the subject of some modification was encouraging. Under the new formula, he said, no export duty was payable (apart from a comparatively small *ad valorem* duty) for wolfram prices below 140s. per unit. There were also "acceptable reductions" in total export duties payable on prices within the medium range.

Regarding operations during the current financial year Mr. Gates stated that, so far, a satisfactory margin of profit had been made. Bearing in mind the inherent instability of wolfram prices, he felt justified in describing the company's immediate outlook as bright. (An extract of Mr. Gates' speech will be found on page 538).

Broken Hill South Earns Higher Profits

The tonnage of ore treated by Broken Hill South and its subsidiary company, Barrier Central, during the year ended June 30, 1955, amounted to 266,433 tons and 72,217 tons respectively.

RECENT FINAL DIVIDENDS AND PRELIMINARY FIGURES

Name of Company	*Year ended*	*Final Dividend*	*Net Profit After Tax This Year*	*Net Profit After Tax Last Year*	*Total Dividends This Year*	*Total Dividends Last Year*
		%	£(000)	£(000)	%	%
Coronation Synd.	30. 6.55	12½	112.8	63.0	20	15
N. Kalgurli *a*	22. 3.55	25	66.9	56.4	37½	43¾
Kamunting	31. 3.55	15	92.6	83.1	20	17½
Lampa Mining	30. 6.55	15	N/A	N/A	20	15
Cementation	31. 3.55	12½*b*	322.8	222.8	12½	17½
Pahang Cons.	31. 7.55	40	202.3	173.3	50	40
Renong Tin	30. 6.55	30*c*	99.4	103.9	45*c*	45
Rho-Anglo	30. 6.55	62½*d*	17,259.5	18,177.1	77½	75
Rhokana	30. 6.55	212½*d*	10,022.5	9,944.0	262½	250
Lydenburg	30. 6.55	10.7	30.3	15.0	10.7	7.14
New Wit. Gold	30. 6.55	7½	174.0	155.0	7½	5
Electro Zinc *e*	30. 6.55	40	2,421.8	2,186.8	55	47½
Messina *f* (Transvaal)	30. 9.55	230	1,262.0	1,235.0	380	370

a 15 months operations.
b On larger capital. (Previous year's 17½ per cent equivalent to 11 2/3 per cent on new capital).
c Excluding special bonus of 20 per cent (nil).
d Net.
e Australian currency. (Net profit figures after tax, Amtn. and Depn.).
f Profit figures after taxation depn. and reserves.

RECENT INTERIM DIVIDEND ANNOUNCEMENTS

Company	*Year Ending*	*Dividends*	*Date payable*	*This Year to date*	*Total Last Year*
		%		%	%
Tehidy Mins.	31.12.55	5	Nov. 20	5	15
Union Corp.	31.12.55	40	—	40	*a*
Gen. Mining	31.12.55	10	Dec. 4	10	25
New Brok. Hill	31.12.55	40	Jan. 2	40	60
Camp Bird	31.12.55	12½*b*	Feb. 14	20	10
Frontino Gold	31.12.55	7½*c*	Jan. 2	7½*c*	15*d*
Pengkalen *e*	30. 9.55	15	Nov. 4	35	55
Selayang Tin	30. 9.55	10	Nov. 25	10	20
Cam & Motor	30. 6.55	20	Jan. 12	20	40
Minerals Sepn.	31.12.55	5	Nov. 4	5	20
Ankobra Riv. Pwr.	30. 6.55	15*g*	Oct. 1	15	5
Bt. Petroleum	31.12.55	5*c*	Dec. 1	5*c*	19*d*
Petaling Tin *f*	31.10.55	20	Nov. 19	70	42½
Cent. Norseman	31. 3.56	30 *i*	Dec. 9	30 *i*	60 *i*

a 1954 dividends—20 per cent tax free (equivalent to 10·909d. less tax) and 73 1/3 per cent less tax.
b Second interim. Carries no implication that final will be paid.
c Tax Free.
d Less Tax.
e Third interim. (1953-54 three interims and one final.)
f 1954-55 four interims. (1953-54 four interims and one final).
g No further dividend will be declared for year 1954-55.
h Tax free.
i In terms of Australian currency.

This compared with 272,670 tons and 82,620 tons in the preceeding year. Lead concentrates produced by Broken Hill South amounted to 41,836 tons (44,115 tons) and zinc to 49,759 tons (49,358 tons). Barrier Central's output of concentrates was 11,204 tons in the case of lead (13,443 tons) while zinc totalled 14,594 tons (16,140 tons). As these production figures on the whole fell away from those of the previous year, the substantially increased profits earned by the company during the past financial year may be attributed primarily to higher metal prices received and a better income from investments.

Year to June 30	*Working Revenue*	*Taxation**	*Net Profit*	*Dividend*	*To Reserve*	*Carry Forward†*
	£A	£A	£A	£A	£A	£A
1955	3,022,459	1,009,984	1,839,008	560,000	235,095	2,317,293
1954	2,227,036	690,358	1,374,632	480,000	611,214	1,746,531

* Including royalty. †After elimination of minority interests.

Ore reserves re-estimated as at June 30, 1955, indicate a tonnage of 1,650,000 (1,624,000 tons) available for Broken Hill South and 250,000 tons (302,000 tons) for Barrier Central.

Sir Alexander Stewart is chairman.

Waihi's Windfall

That Waihi Investments and Exploration holds 984,250 shares from a total of 1,750,000 in issue by Puket Tin Dredging is a most important fact in assessing the company's outlook for its current financial year ending on December 31, 1955. As Mr. G. Mitchison, the chairman, stressed in his statement to shareholders accompanying the latest reports and accounts, the fact that Puket paid 35 per cent in respect of the year 1954 enabled Waihi to declare a 10 per cent dividend and increase its carry forward by nearly £4,000.

It is encouraging, therefore, that during its current year Puket has continued to show satisfactory results and that, subject to the unforeseen, final figures should be comparable with those of 1954. Already 25 per cent has been paid out by way of first and second interim distributions leaving—if last year's procedure is to be followed—one further dividend to come. Mr. Mitchison points out, however, that the property has not a long life and opportunity is therefore being taken when possible to write down assets and to build up reserves.

A windfall of some proportions came the way of Waihi during its past financial year through the sale of a dredge by Harrietville (Tronoh), the Australian gold producer, in which the company has a shareholding. So far, this has meant £40,000 of Waihi's loan to Harrietville being repaid while the remaining £14,350 is expected in due course.

During the year ended December 31, 1954, Waihi Investments and subsidiary companies made total revenue of £196,396 as compared with £21,173 during the previous year. After all expenses and the dividend which absorbed £14,257 (£3,409) the balance carried forward moved up to £11,778 from £5,473.

Meeting, London, November 22.

Natal Coal Pays Maiden Dividend.—Coal sales by Natal Coal Exploration Co. during the year ended June 30, 1955, advanced sharply to 487,460 tons from 231,595 tons during the first nine months' of operations which ended on June 30, 1954.

Reflecting this gain in production, profits moved up to £88,433 from £59,931. After deduction of taxes and other expenses a maiden dividend of 3d. per share on the issued ordinary capital of £1,200,000 in shares of 5s. was paid absorbing £60,000. Unappropriated profits carried forward totalled £32,147 as against £20,767. Mr. T. Coulter is chairman. Meeting, Johannesburg, November 30.

Current Profits of Capper Pass Decline.—In his statement to shareholders of Capper Pass and Son, smelters and refiners of non-ferrous metals, Mr. A. D. Pass, the chairman, referred to the company's current operations. During the first six months, he said, although metal prices had risen, fuel, power and labour costs increased even faster and, as a result, profits were a little lower than those in the previous year.

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(Incorporated in the Union of South Africa)

MR. T. COULTER'S STATEMENT

The thirty-fifth annual general meeting of members of South African Coal Estates (Witbank) Limited will be held at 44 Main Street, Johannesburg, on Wednesday, November 30, 1955, at 10.00 a.m. The following are extracts from the statement by the chairman, **Mr. T. Coulter,** which has been circulated to shareholders with the annual report and accounts:—

ACCOUNTS

The profit derived from coal mining during the year ended June 30, 1955, after deduction of Administration Expenses, was £303,089 being an increase of £18,649 when compared with the figure for the previous year. This improvement was wholly due to a satisfactory revision in the terms of the contract with the S.A. Iron and Steel Industrial Corporation Limited for the supply of blend coking coal.

Sundry revenue, dividends and interest totalled £12,958 and a loss of £4,401 was incurred in Clewer Township, where no Stands were sold during the year.

The net profit was £311,646, which amount, together with unappropriated profit of £183,493 brought forward, £112 being the net proceeds from the sale of reclaimed materials, and £2,667 being profits appropriated for capital expenditure written back, made a total of £497,918 available for appropriation.

Provision for taxation absorbed £67,580 and directors' additional remuneration was £4,000. The Company's net outstanding liability in terms of the Silicosis Act was £41,970 and a bad debt of £136 was written off. Dividends at the rate of 3s. 6d. per share called for the payment of £175,000 and unappropriated profit of £209,232 was carried to the balance sheet.

The latter calls for little comment. Expenditure on Fixed Assets totalled £1,588,870 and Current Assets (including Stores) totalling £480,259 show a satisfactory margin over Current Liabilities and Provision for Taxation amounting to £271,027.

OPERATIONS

The sales output of coal for the year under review was 1,612,885 tons, being a decrease of 26,731 tons in comparison with the previous year.

The following tabulation gives a comparison of coal sales from the two pits for the past three years:—

	Year ended 30.6.1953	Year ended 30.6.1954	Year ended 30.6.1955
Landau No. 3 ...	1,148,948	1,127,531	1,113,605
Navigation ...	511,743	512,085	499,280
	1,660,691	1,639,616	1,612,885

In addition to the above tonnages, there were despatched to the South African Iron and Steel Industrial Corporation Limited 106,721 tons of Steam Coal Middlings and 22,269 tons of Washery Discard. The corresponding figures for the year ended June 30, 1954, were 102,276 and 3,420 tons.

In the year ended June 30, 1954, 547 hours hauling time was lost due to the shortage of railway trucks. The position was considerably improved last year and only 144 hours were lost from this and other causes.

Landau No. 3: Conditions underground have not improved and most of the sections are working along steep slopes where tramming conditions are difficult. Development is being concentrated in the South-east corner of the property.

Navigation Mine: The development position remains satisfactory and mining conditions are unchanged.

Native Labour: Although the supply of Native labour has been satisfactory in so far as numbers are concerned, the standard of efficiency has deteriorated especially at Landau No. 3.

Calculated from July 1, 1955, the Navigation pit has an estimated life of the order of 12 years and the Landau pit 9½ years. No suitable replacement exists for Navigation, but an area called Landau No. 4, owned by the Company, has been proved by drilling and will replace Landau No. 3.

Provisions are being made out of profits so as to strengthen the cash resources, bearing in mind the new capital expenditure to be incurred on Landau No. 4 in due course.

Copies of the annual report and accounts are obtainable from the London office of the Company, 11 Old Jewry, E.C.2.

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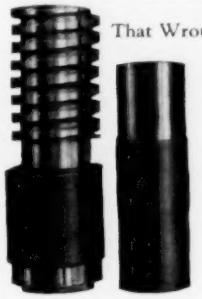

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BERALT TIN AND WOLFRAM

MR. F. GATES'S SPEECH

The twenty-seventh annual general meeting of Beralt Tin and Wolfram, Ltd., was held on October 28 at Winchester House, London, E.C.

Mr. F. Gates, Chairman of the Company, in the course of his speech said:—It is a pleasure to be able to report another year of satisfactory trading which is reflected in the Board's recommendation of a final dividend of 80 per cent., bringing the total dividend for the year ended March 31, 1955, to 130 per cent.

FINANCIAL RESOURCES

The Company's position, as plainly set out in the Balance Sheet, displays a financial strength that provides a strong shield against adverse conditions.

In 1949 I mentioned that, owing to delay in the conclusion of the Anglo-Portuguese Trade Agreement for 1949, the issue by the Portuguese authorities of export licences was entirely suspended for about two months. In 1951, I explained that no shipments to the United Kingdom were permitted during March of that year because the quota of wolfram concentrates allocated to the United Kingdom during the first quarter of 1951 had been exhausted and that there was a further hold-up of shipments in June/July of the same year for a similar reason.

Here then are three occasions within three years on which the normal inflow of proceeds of sale of our concentrates was interrupted for varying periods whilst inter-Governmental arrangements were being completed, and the possibility of similar interruptions in the future, which might well be of longer duration, cannot be ignored.

We are working in a foreign country in a district which depends largely on our mining operations for employment of its people; and even if we were permitted to do so we should not consider it right, or in the Company's long-term interests, to discharge large numbers of our employees out of hand, should a similar situation arise in the future, or the price of wolfram fall to an uneconomic level.

It is not, therefore, difficult to visualize a situation in which very heavy drafts might, for one reason or another, be made on the Company's cash resources before normal working conditions were restored.

I well remember when the Company had very little cash and the difficulties which resulted therefrom. We have now progressively built up a really strong financial position; and I consider it of great importance that the Company should at all times retain substantial resources in readily available form.

ORE RESERVES

I remember that some 35 years ago I assured members of The Wolfram Mining and Smelting Company, the forerunner of this Company, that they need have no worry about our ore reserves. I am glad to say that I can give the same assurance to-day with even greater emphasis. The Panasqueira mine is no small one.

WOLFRAM SALES

You will have noticed a reference in the Directors' Report to favourable long-term contracts for the sale of wolfram concentrates negotiated in earlier years.

At the beginning of the year under review—namely, at April 1, 1954—two of those contracts were still running, the first for 100 long tons per month with the Ministry of Materials at the market price current from time to time, but subject to a fixed minimum price, and the second for 40 long tons per month with the U.S. Government at a considerably higher fixed price.

The Ministry exercised their right to cancel the former contract as from September 30, 1954, but up to that date this contract was of great value in a period when the wolfram price was unduly depressed. The American contract remains in force until end September, 1957, and is our only present contract at a fixed or minimum price.

The remainder of our production is covered for the most part by running contracts under which each month's deliveries are paid for at the average market price for the month plus a premium in recognition of the quality of the concentrates.

Operations for the current financial year are so far showing a satisfactory margin of profit and although I am never likely, after my long experience of the wolfram market, to forget its mercurial possibilities, I feel justified in describing the Company's immediate outlook as bright.

PUNITIVE TAXATION

Unhappily, it seems that this year's profit, like profits earned in recent years, will still be subject to punitive taxation.

Over the last four financial years approximately 80 per cent. of the company's net earnings has been absorbed by tax demands in Portugal and England. We would not seek to contest the right of our Portuguese friends to levy tax on our operations at a rate commensurate with rates of taxation in other parts of the world, nor can we complain if they choose to levy such taxation mainly in the form of an export tax instead of as a tax on income.

We do, however, feel that we are the victims of a flagrant injustice by reason of the fact that, merely because the Portuguese authorities have decided to collect their tax in that form, we are deprived by the inflexibility of the U.K. tax code of the benefits of double taxation relief which are enjoyed by mining concerns operating in other countries where taxation is levied in a form more comparable with U.K. income tax. The Company's loss arising out of this obvious inequity is no small one. If the Portuguese tax had been admitted for purposes of double taxation relief, the total amount available for distribution over the last four years would have been greater by well over £1,500,000.

We had hopes that the representations made to the Royal Commission on Taxation of Profits and Income on this matter in general by the British Overseas Mining Association, and by the Company on its own individual case, might have led the Commission to recommend the removal of the restrictions on double taxation relief under which we and some other mining companies suffer, but although the Commission recognized the problem in paragraph 700 of their Report, they made no proposal for its solution.

A good deal of additional work has fallen on our General Manager in Portugal, Mr. G. A. Smith, and his assistants in connection with improvements to the Company's surface installations, mills, workshops, stand-by power equipment, etc., as well as expansion of welfare schemes, and it is a great pleasure to me to express once again the Board's appreciation of their valuable and loyal efforts.

The report and accounts were adopted.

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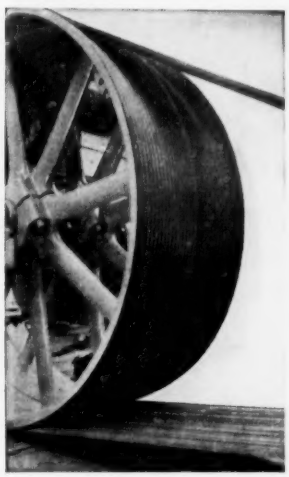

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